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SOVIET NAVAL FORCE CONTROL
AND THE RED NAVAL C^3 SYSTEM:
WHAT THE BLUE COMMANDER NEEDS TO KNOW

by

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Soviet Naval Force Control is the process that the Soviets use to control naval forces during execution of assigned issions, as well as create and maintain combat readiness and fighting efficiency. It is the underlying basis of the Red naval 3 system; it provides control throughout a system composed of command posts, intelligence sensors, naval forces and eapons, and an interconnecting communications network. The concept of Soviet Naval Force Control and its support of e Red naval C3 system is discussed in this thesis. Emphasis is placed on how the Blue commander can use this information enhance his decision making process concerning the utilization of his own C3 system. Major concepts examined in the esis include Marxist-Leninist theory, Soviet military thought, cybernetics, and the Naval Force Control process. The as-mption is made by the author that a Blue commander who is aware of and conversant with the major concepts presented this thesis will have a better understanding of the Soviet approach to the C3 process and how it affects Soviet actions. In rn, this understanding will increase his ability to control his own C3 system and successfully achieve his goal in battle out-ome.

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Soviet Naval Force Control and the Red Naval C3 System: What the Blue Commander Needs To Know

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ABSTRACT

Soviet Naval Force Control is the process that the Soviets use to control naval forces during execution of assigned missions, as well as create and maintain combat readiness and fighting efficiency. It is the underlying basis of the Red naval C3 system; it provides control throughout a system composed of command posts, intelligence sensors, naval forces and weapons, and an interconnecting communications network. The concept of Soviet Naval Force Control and its support of the Red naval C3 system is discussed in this thesis. Emphasis is placed on how the Blue commander can use this information to enhance his decision making process concerning the utilization of his own C3 system. Major concepts examined in the thesis include Marxist-Leninist theory, Soviet military thought, cybernetics, and the Naval Force Control process. The assumption is made by the author that a Blue commander who is aware of and conversant with the major concepts presented in this thesis will have a better understanding of the Soviet approach to the C3 process and how it affects Soviet actions. In turn, this understanding will increase his ability to control his own C3 system and successfully achieve his goal in battle outcome.

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I. INTRODUCTION

> Command and Control is the exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of the mission.
>
> A Command and Control System consists of the facilities, equipment, communications, procedures, and personnel essential to a commander for planning, directing and controlling operations of assigned forces pursuant to the missions assigned. [Ref. 1 : p.74]

Americans view the effectiveness of a command, control and communication system (C3), as defined above, to be a function of one's own capabilities, the enemy's capabilities and the environment. The commander, with his C3 system, must comprehend his own forces (mission, procedures, hardware, etc.), the enemy's forces, and the combat environment in order to successfully achieve his goal in combat outcome.

In order to execute U.S. Maritime policy, commanders of U.S. Naval Forces must be able to control their forces, i.e., guide them to accomplish their assigned mission with the help of a C3 system. Since engagement outcome not only depends on one's onw forces and environmental conditions, but on the enemy (his forces, goals, capabilites, operating procedures, etc.), a U.S. commander's effectiveness will be enhanced by his knowledge of Soviet systems and actions, and his ability to exploit their weaknesses, in particular weaknesses in command and control. The commander must be knowledgeable in Soviet naval C3 capabilities. He must be aware of the Soviet battle management process as well as Soviet hardware. However the Soviet concept of Command and Control is, in many ways, different from the American concept of Command and Control.

> Naval Force Control is the work of commanders, staffs, and other control elements to maintain a high state of combat readiness of subordinate troops and to control them in order to carry out assigned missions. [Ref. 2 : p.75]

Soviet Naval Force Control (*Upravleniye Silami Flota*) is the term used by the Soviet military to reflect the concept of control of naval forces. The concept can be equated to the term Troop Control (*Upravleniye Voyskami*) which refers to the control of ground forces. The thesis will henceforth use the term Naval Force Control since the subject matter pertains to control of naval forces.

Control not only pervades military affairs but saturates every facet of Soviet society. It is vital to continued Soviet leadership by the Communist party. There is no explicit term for "command" in *Upravleniye Silami Flota*, although the command function is not ignored by the concept. However, emphasis is on the word "control".

Thus, for the Blue commander to be knowledgeable in Soviet naval C3 capabilities, he must be familiar with Soviet Naval Force Control. He must understand that Soviet Naval Force Control is the building block which the Soviet commander makes his decision on how to conduct C3.

What does the Blue commander gain by his recognition of Soviet Naval Force Control? He gains the ability to better protect his own C3 system from enemy interference. He acquires the aptitude to better neutralize, degrade, and/or destroy enemy forces. He understands the Soviet approach to the C3 process and how it affects Soviet actions. As the theorist Sun Tzu stated, "Know the enemy and know yourself." [Ref. 3 : p.2]

Once the Blue commander is conscious of the concept of naval force control and its application to the naval C3 system, he can now concentrate on the progression of the Blue force C3 system. How can this be accomplished? One thought is the use of simulated war games/trainers to test Blue force effectiveness against possible Soviet actions as well as test Blue force initiatives in combat. In this case, there must be a working knowledge of possible Soviet actions and reactions within the C3 arena in order to provide useful simulation and training.

The purpose of this thesis is to conduct an investigation of what knowledge the Blue force naval commander needs concerning Soviet Naval Force Control and how it is applied to the Red naval C3 system, and thus, to the overall effectiveness of the Soviet Navy. The Blue commander must be able to grasp the Soviet approach to conflict and how this approach controls the use of their naval forces.

This thesis is organized into chapters. Each chapter is concluded by a chapter summary. Chapter Two examines the driving principles behind control such as Marxist-Leninist theory, Soviet military thought, and cybernetics. Chapter Three takes a closer look at the Soviet control process. General concepts and management of naval force control are discussed. Chapter Four pertains to the structure, missions and capabilities of the Soviet Navy. Chapter Five discusses the Red naval C3 system; the command posts, communications and intelligence links, which, when bonded with forces and weaponry, comprise the C3 system. Chapter Six presents an overview of the concepts

reviewed in the previous chapters and provides recommendations for enhancing the effectiveness of the Blue naval C3 system.

II. FOUNDATION FOR UNDERSTANDING NAVAL FORCE CONTROL

A. INTRODUCTION

The Blue commander must comprehend that control is vital in all aspects of Soviet life and a standard of Soviet leadership. To understand this concept, it is necessary to first examine the driving principles and theories behind control. These principles include Marxist-Leninist theory, Soviet military thought, the effects of past war experience and the revolution in military affairs on military thought, and cybernetics. This chapter presents each principle to the reader. In conclusion, the information is summarized with the intent of explaining how the Blue commander can use this knowledge to increase the effectiveness of his decision making process for employing his C3 system.

B. MARXIST-LENINIST THEORY

> Marxist-Leninist philosophy is simultaneously the science of laws governing the development of nature, society and thought and the world outlook of the working class, affirming communist ideals and moral principles. In it, elucidation of truth and defense of class interests do not exclude but, on the contrary, necessarily imply each other. That is why the Marxist-Leninist philosophy is an instrument for the revolutionary remaking of society and a method of scientifically examining social phenomena which helps find the correct path towards the historical goals of the working class. [Ref. 4 : p. 57]

To understand Soviet Naval Force Control, one must understand the Soviet military mindset. The roots of this mindset are imbedded in Marxist-Leninist theory. Marxism-Leninism is thought of as scientific theory by the Soviets. Science encompasses the beliefs that laws governing the evolution of the world, as composed of nature and society, exist and that these laws can be revealed by man, thus giving him the means of controlling nature and society. Science allows Soviets to impose order on the world. Hence, the Soviets insist upon all policies and decisions being scientifically substantiated. [Ref. 5 : p. 42] Marxist-Leninist theory is founded on the philosophical base of dialectical and historical materialism. Dialectical and historical materialism "... is a philosophical world outlook that fulfills the functions of a theory of cognition, serves as a universal method of cognition and practical action." [Ref. 6 : p. 292]

To examine dialectical and historical materialism, one must begin by unveiling the Marxian theory of materialism. Karl Marx believed that matter existed independently of, and prior to, ideas; and that ideas were simply an embodiment of matter. [Ref. 7 :

p. 30] In other words, the world exists independently of man's senses. Marxist theory further states that reality is material; everything that exists and all events that take place are products of matter. [Ref. 8 : p. 6]

Marx's dialectic nature of materialism is focused on three steps described as the thesis, antithesis, and synthesis; a process which, in the past, has been discerned as a development of thought or logic. Essentially, a statement is made (thesis) and then, by a process of examination, another statement is made which contradicts the first statement (antithesis). A third statement which merges the first statement and its contradiction brings the process to a conclusion (synthesis). The synthesis then becomes a new thesis and the process continues. [Ref. 7 : p. 34]

Dialectic materialism is further explained by the three laws governing dialectics. These laws are based on the philosophy that everything is always changing and always moving. [Ref. 4 : p. 157]

The first law is the transformation of quantity into quality. Quantity is described in philosophy as aspects of an object which become rearranged, increased or decreased, while the object maintains its identity. Quality is defined as the disappearance of the old object and the appearance of a new object. The law of transition of quantity into quality represents a gradual buildup of changes which leads to the disappearance of the old and a qualitative change. [Ref. 4 : p. 163]

The second law is the law of the unity and conflict of opposites.

> The source of any object's movement lies in the interaction (conflict) of opposites which are inherent in it. Therefore, movement is self-movement. Opposites can attain only partial, relative equilibrium, and that only for a time; they can never be balanced completely. The disparity, the contradiction between them is always present in varying degrees, being as indestructable as motion itself. The unity, the equal effect of opposites, is temporary and relative, whereas their conflict is eternal and absolute. [Ref. 4 : p. 183]

In essence, as described in the above quote, motion, development, and progress are seen as the result of a struggle or conflict of opposites which continues eternally.

The third law, negation of the negation implies a succession of stages of development in which each stage disappears with time, being negated by each following stage, and so on. The succession of developmental stages is viewed as progressive. [Ref. 4 : p. 175]

Dialectical materialism provides the structure for the application of Marxist history, better known as historical materialism or economic determinism. Historical materialism views history as an endless series of class struggles between the oppressor and the op-

pressed, the exploiter and the exploited. This continuous conflict will only end when the highest "communist" stage, the era of the classless society, is attained. This can only be reached through revolution. [Ref. 9 : p. 41]

Marx explains this philosophy within the premise that economic forces have determined the passage of history; economic forces being the *modes of production* which determine the entire composition of society. Modes of production include the systems of law, politics, morals, religion, philosophy, and art--the whole way of life or culture. [Ref. 7 : pp. 64-65] Corresponding to the modes of production are the *relations of production*, which mainly concern the form of ownership; ownership of tools and other means of production. Moreover, in Marxian usage, relations of production is synonymous with the term "class struggle". [Ref. 8 : p. 19] Marx believed that history was based on continuing stages of class struggles. Progression from one stage to another would evolve through revolution. "Revolutions occur when the 'alienated' or 'exploited' class becomes politically conscious of its exploitation and acts to destroy the social and economic system, creating a new economic order." [Ref. 10 : p. 1-1] At some point, class struggle would become unbearable, and the last and greatest class struggle would take place in the form of revolutionary overthrow of the ruling class by the proletariat. [Ref. 7 : p. 65], followed by the synthesis of a communist society.

Thus the Marxist outlook on history focuses on economic factors, chiefly private property, as the basic origin of war. As long as capitalism exists, war is unavoidable.

The Soviets systematize war into two major categories--just and unjust wars. "Any war that is waged by a people for the sake of freedom and social progress, for liberation from its state sovereignty, against an attack is a just war." [Ref. 6 : p. 63] Therefore, a war is just if it disrupts capitalism. Conversely, unjust wars are wars that harm the forces of socialism. Just and unjust wars are subcategorized into the following:

1. wars between opposing social systems;
2. civil wars between socialists and capitalists;
3. wars between colonialists and the peoples fighting for their independence; and
4. wars between capitalist states. [Ref. 6 : p. 70]

Marxist-Leninist theory provides a *modus operandi* for justifying the use of struggle, conflict and revolution to destroy the oppressors of society in order for the oppressed to survive. It allows the Soviet people a moral mission of eradicating reactionary forces, or any group which threatens the socialist camp, in the pursuit of worldwide Communism. It concedes to Soviet leadership an ideological doctrine that serves as the

foundation of the Soviet state. The Communist Party has been kept in power to the present day by the Armed Forces. Soviet forces are immersed in the teaching of Marxism-Leninism [Ref. 5 : p. 32] , thus ensuring the power of the CPSU to continue its conflicts against all non-socialist states with the backing of the people and the Armed Forces of the Soviet Union.

C. SOVIET MILITARY THOUGHT

Before discussing Soviet military thought, it is important to comprehend that the Soviets use the systems approach when developing and revising military thought processes. What is the systems approach?

In complex systems, behavior of system elements must be explained in terms of interrelationships among the elements themselves as well as with the environment. The systems approach is a method of thinking; a philosophy which considers a complex system (project, process, problem) as a whole. "Because of the mutual interaction of the parts, the whole takes on distinctive properties that would be lacking were one to remove a part." [Ref. 11 : p. 7] This approach is in contrast to the more widely known analytical approach, in which a system is broken down into its individual properties and analyzed separately.

A system is described as a set of elements and element attributes of which relationships exist between the elements, their attributes, and the environment. The system must achieve some goal. There are five basic considerations concerning systems thinking.

1. *Objectives of the total system together with performance measures.* The objectives are the goals of the system. These goals should be quantifiable.
2. *The system's environment.* The environment comprises everything that is outside the system's control and that affects system performance.
3. *The resources of the system* Resources are the means that the system uses to reach its objectives. Resources are usually inside the system.
4. *The components of the system.* Components are all the activities that must be performed in order for the system to attain its objectives.
5. *The management of the system.* Management pertains to the planning and controlling of the system. [Ref. 11 : p. 29]

The Soviets apply the systems approach to formulating the conceptual basis of Soviet military thought. Specialized systems theories such as cybernetics and operations research are particularly important to Soviet Naval Force Control.

As discussed in the previous section, the Soviets view history as a process of struggles. These struggles often lead to war, i.e., armed conflict. The Soviets regard war as a predicament which must be planned for with the expectation of victory. Dialectical logic and historical materialism permit the Soviets to embody "...military power and its use into their policy for achieving national objectives." [Ref. 5 : p. 51] Hence, the Soviets have used a very scientific approach to the study of war. They endeavor to uncover its operating principles and, once understanding these laws, develop methods of operation which assure Soviet victory in all types of armed conflict. [Ref. 10 : p. 2-1] Soviet military thought is part of a strict and refined framework which provides backbone concepts, definitions and laws developed and maintained by the highest Soviet political and military leaders with the goal of achieving that victory.

Soviet military thought is comprised of a hierarchy of concepts and terms; military doctrine (VOENNAYa DOKTRINA), military science (VOENNAYa NAUKA), and the most important element of military science, military art (VOENNOE ISKUSSTVO). See Figure 1 on page 9 for a diagram of the hierarchy.

D. MILITARY DOCTRINE

The Soviet Military Encyclopedia defines military doctrine.

> A system of views adopted in a state for a given period of time on the objectives and character of a possible war, on preparation of the country and armed forces for war, and on methods of waging the war. Military doctrine usually determines the enemy who will have to be fought in a possible war; the character and objectives of a war in which a state and its armed forces will have to participate, and their missions; what armed forces are needed for sucessful conduct of a war and the directions in their development; procedures for preparing the country for war; and methods for waging war. The basic provisions of military doctrine are determined by the socio-political and economic system, level of production, status of the means for waging war, and the geographical position of one's own and the probable enemy's country; and they also stem from a state's domestic and foreign policy. [Ref. 12 : p. 213]

Military doctrine differentiates two interrelated aspects; political and military-technical. The political aspect is comprised of the political goals of a war and how those goals result in the armed forces and the country's preparation for that war. The military-technical aspect, in its attempt to achieve the political goals, is concerned with warfighting methods and development, and emphasizes weapon technology and command competence.

The CPSU is the source of all approved military doctrine. Doctrinal views must be scientifically founded as being objectively correct, and must be officially accepted by the

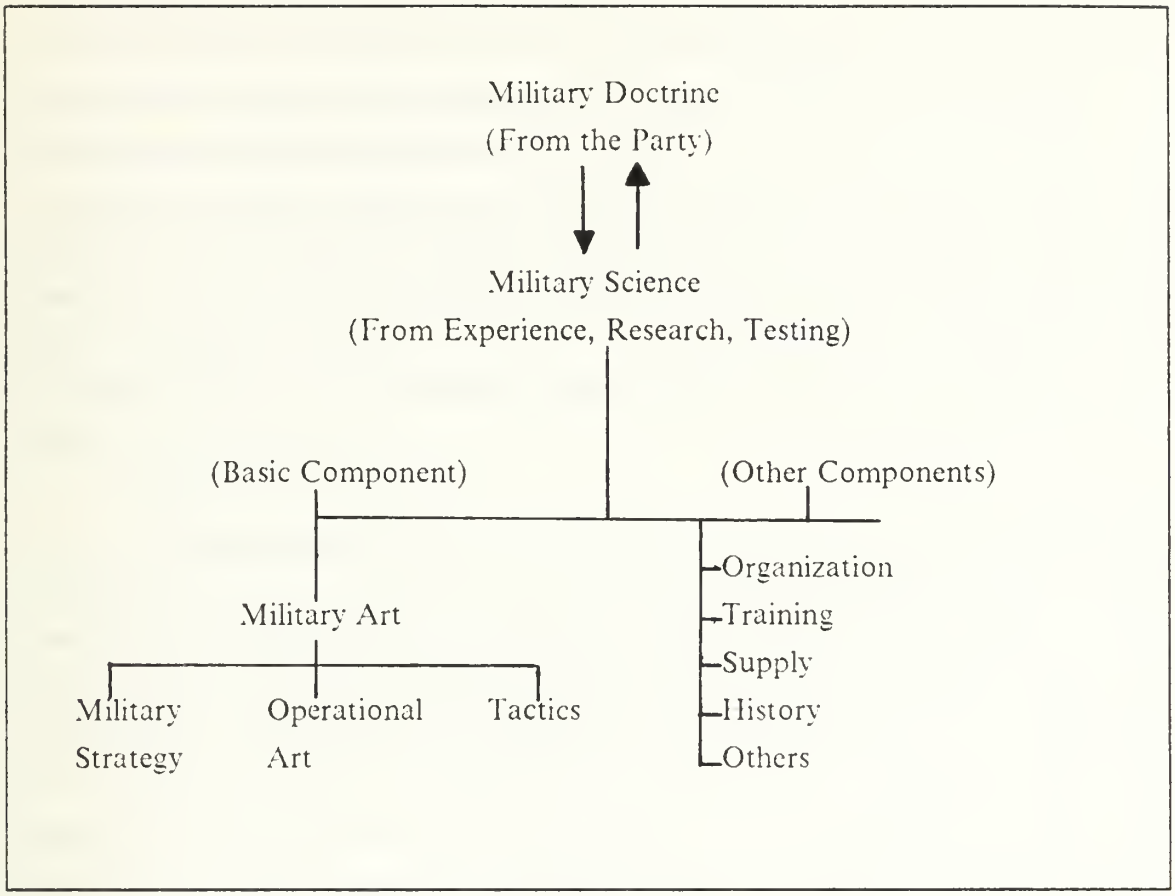


Figure 1. Hierarchy of Soviet Military Thought

Communist Party leaders. Military doctrine is developed by high-level Party members and approved by the Party's Central Committee. [Ref. 10 : p. 2-3]

Soviet doctrinal beliefs result in requirements for the country and its armed forces; requirements that transform doctrinal thought into action. Superior Soviet military capability must be assured in order for the country to be ready to wage war and meet its political objective of victory. Hence, the Soviets place great emphasis on preparation for war. The laws of war state that war can be prepared for by:

- insuring the Soviet Union has superior forces at the start of war,
- insuring that the potential war capabilities of the homefront are always maximized for the support of war,
- insuring that the Communist Party maintains complete control, and
- insuring the Soviet people express views consistent with Party political and military policies. [Ref. 10 : p. 2-4]

Military doctrine is not static. The state explicitly revises the doctrine as needed. The state may either improve the existing doctrine or completely replace it with a new doctrine. Current Soviet military doctrine is oriented toward waging war with a diametrically opposed social system in which capitalism would succumb to socialism. War may involve the use of nuclear weapons. While war initially could be conventional, the losing side inevitably would resort to tactical and strategic weapons in an effort to avoid complete defeat. Final victory would hinge on joint actions of all arms of the services. In scope, war would unavoidably become intercontinental, since both sides possess long-range missiles, nuclear missile-carrying submarines, and strategic bonbers. The first massive nuclear strikes would determine the subsequent course of the war. [Ref. 13 : p. 4-2]

The Soviet country and the Soviet armed forces are preparing for victory in a nuclear war. Soviet military doctrine follows the assumption that the imperialists are planning a surprise nuclear attack against the USSR and other socialist countries, or that a conventional war could escalate into military operations involving the use of nuclear weapons. Thus, Soviet armed forces must constantly be prepared to repel such attacks. [Ref. 6 : p. 305]

E. MILITARY SCIENCE

A leading requirement of Soviet military doctrine is that it be scientifically substantiated. Military science sustains the scientific foundation of the CPSU's military policies.

> Military science is the system of knowledge dealing with the nature and laws of war, the preparation of the armed forces and the country for war, and the methods for waging war. Military science, together with other sciences, studies war as a complex socio-political phenomenon. Military science data are used in developing military doctrine. [Ref. 12 : p. 238]

Another definition states

> Military science investigates the objective laws governing armed conflict and elaborates questions pertaining to the theory of military art which is the basic component of military science, as well as questions pertaining to the organization, training, and supply of armed forces, and also deals with military historical experience.[Ref. 10 : p. 2-4]

A more utilitarian interpetation is

> Military science examines all military affiars, past, present and future and then works out the most current methods of waging war. [Ref. 10 : p. 2-4]

Major components of military science include the theories of military art, military construction, military instruction and indoctrination, and military economics and rear services. [Ref. 12 : p. 238] The goal of military science is to reveal the general laws of war and the laws of armed conflict.

The Soviets make a distinction between the terms "armed conflict" and "war". Armed conflict deals with the struggle on the battleground and is managed by military commanders. War is a broader vision of armed conflict; war embraces the economic, political, ideological and technical aspects of struggle in addition to the struggle on the battleground. War is managed by the political leadership of the Soviet Union. [Ref. 10 : p. 2-5]

1. General Laws of War

Marxist-Leninist teaching and the experience of past wars are the basis for Soviet military science. Marxist-Leninist teachings proved that war is not a random chaotic process of accidents, but a process governed by laws. [Ref. 6 : p. 310] The Marxist view of history interprets historical development as guided by class struggle and revolution. The Soviets have pivoted their laws of war on historical change and progress and critical review of past war experience and policies. These laws are used in every component of military science, including the theory of Soviet Naval Force Control. The general laws of war and simple interpretations of these laws are listed below.

- The course and outcome of war waged with unlimited employment of all means of conflict depend primarily on the correlation of available, strictly military forces of the combatants at the begining of the war. [Ref. 10 : p. 1-11]

The first law implies that Soviet forces must be ready at the beginning of war in order to be decisive in the outcome. "The large Soviet force structure today, therefore, finds a clear military scientific justification in this first law of war." [Ref. 10 : p. 1-11] Modern nuclear war places even more emphasis on this law since the Soviets believe that the first massive strike will determine the course of the war. Thus, forces ready at the onset will be the determinants of the outcome.

- The course and outcome of war depend on the correlation of military potentials of combatants. [Ref. 10 : p. 1-11]

The second law implies that the consequence of war will be subject to the mobilization potential of the Soviet Union (the industrial base and the work force, the scientific and research base, the organizational mechanism for turning civilian resources to military use, etc.). [Ref. 10 : p. 1-12]

- The course and outcome of a war depends on its political context. [Ref. 10 : p. 1-11]

Political context concerns entering a just war at the right time and on the right side. A just war will strengthen the Soviet armed forces' conviction of the righteousness of the war. [Ref. 14 : p. 20] Assessment of the political makeup of Soviet forces must also be made. For example, Soviet troops from national minority groups are seen as conspirators of incensing anti-Soviet sentiments. Therefore, these groups are spread throughout Soviet forces to dilute any political aggregation of such sentiments. [Ref. 10 : p. 1-12]

- The course and outcome of a war depend on the correlation of moral-political and psychological capabilities of the peoples and armies of the combatants. [Ref. 10 : p. 1-11]

The fourth law implies that proper psychological preparation of one's own forces is necessary to ensure survival and functional abilities of the Soviet people and armed forces. Technical information about nuclear weapons, including the effects of, protection against, and decontamination from nuclear bursts, are part of the Soviet people's political indoctrination. [Ref. 14 : p. 21] Propaganda about the "unjust" disposition of the opponent's actions and lifestyle can also be used to exploit national feelings. [Ref. 10 : p. 1-12]

2. Laws of Armed Conflict

The laws of armed conflict are derived from the general laws of war and describe the principles and relations of armed conflict. The basic laws of armed conflict include:

- the dependence of armed conflict on the military and political goals of war;
- the dependence of the forms and methods of waging armed conflict on the quantity and quality of weapons and combat and special equipment;
- the dependence of the effectiveness of the combat actions of troops on the correspondence of the forms and methods of the actions to the goals (tasks) and situation conditions;
- the dependence of the course and outcome of armed conflict on the relative strengths in men and equipment of the sides, the moral and political and psychological state of personnel, the level of preparation of commands, staff and troops and a number of other factors. [Ref. 15 : p. 22]

These laws are specific applications of the general laws of war noted in the previous section. These laws also place great emphasis on equipment; there is a requirement for both more and better. [Ref. 10 : p. 2-6]

Military science and its laws of war and armed conflict are not complete or static. Military science was shaped and developed through past historic periods and continues its evolvement through ongoing scientific-technical progress. The development of military science is used "...in increasing the combat might and readiness of the Soviet armed forces, in reinforcing the defensive might of the USSR and the other countries of the socialist commonwealth, and in creating favorable conditions for the successful development of socialism and communism." [Ref. 12 : p. 248] Military science is continually growing, under the leadership of the CPSU in order to fulfill the responsibility of defending and strengthening the Soviet Union.

F. MILITARY ART

Military art is the major component of military science and is defined as the theory and practice for preparing for and conducting military operations. [Ref. 12 : p. 192.] The principles of military art determine the direction taken by the actions of the leadership, and show what action should be taken to achieve victory. [Ref. 6 : p. 321] Military art is composed of three integral levels; military strategy, operational art, and tactics.

1. Military Strategy

Military strategy is based on the tenets of military doctrine, past war experience, and the current political, economic and military conditions of the situation.

> At the same time, military strategy is a field of practical activity for the higher military command in training the armed forces for war and providing leadership in armed conflict. Military strategy exerts an influence on the preparation of a country for war in such a way as to ensure victory. [Ref. 10 : p. 2-7]

Military strategy is the highest level of military art. It develops theoretical bases for planning, preparing and conducting war and strategic operations.

There are two aspects of strategy; the theoretical aspect and the applied aspect. The theoretical aspect includes principles of strategy and addresses the theoretical basis for war plan development. The applied aspect consists of actual war plan development. [Ref. 9 : p. 81]

2. Operational Art

> The theory of operational art develops principles and methods for preparing and conducting joint and independent operations and combat actions by operational formation of the services of the armed forces.

Operational art is the bonding link between strategy and tactics. It is derived from strategic requirements with the intent of achieving strategic goals through effective

use of resources readily available. The plans developed from operational art serve as initial data input for tactical operations. Thus, operational art is concerned with combat development at the theater level. [Ref. 10 : p. 2-10]

3. Tactics

The theory of tactics is concerned with preparing and conducting combat by formations, units, and subunits. Military tactics holds a subordinate position with respect to strategy and operational art by acting in their interests and serving to achieve the goals developed by operational art. Each service of the armed forces has its own tactics which are called service tactics. [Ref. 5 : p. 64]

The theoretical aspects of tactics are found in field manuals, training manuals, textbooks, etc. The practical aspects of tactics are ascertained "...in innovative application of its theoretical points and principles by commanders, staffs and troops when organizing and conducting combat operations on a tactical scale with the aim of executing assigned missions." [Ref. 10: p. 2-12]

G. SOVIET THEORY OF THE NAVY

Naval theory must be considered within the overall structure of Soviet military thought. The theory of the Navy is a system of scientific knowledge which reveals laws and principles of naval warfare, naval organizational development, and naval preparation and employment in the armed forces system during times of war and peace. [Ref. 16 : p. 25] The theory of the Navy is based on, and consequently subordinate to military science. It uses the general laws of war and the subsequent laws of armed conflict.

The theory of the Navy consists of interrelated branches which include general theory, naval art, theories of organizational development of the Navy, military training and indoctrination of personnel, command and control of the Navy, naval rear services, and naval history, as well as sciences that deal with the ocean environment. The theory of the Navy is not a set of individual components but a coordinated system of knowledge. [Ref. 16 : p. 31]

One important feature of the theory of the Navy is that it pays strict attention to developing joint actions with other services of the armed forces. [Ref. 16 : p. 28] Joint actions are a fundamental principle within the Soviet military. The Soviets believe that a coordinated effort by all branches of the armed forces is necessary for victory to be realized. Thus, the theory of the Navy is developed to interact with other service theories. [Ref. 14 : p. 25]

Naval art is considered the most important branch of the theory of the Navy. Naval art represents a system of scientific knowledge consisting of laws and principles of naval warfare and the theory and practice of preparing and conducting operations, combat actions, battles, and engagements. It is based on the principles of military art. Structurally, naval art consists of the theory of strategic employment of the Navy, the theory of operational art of the Navy, and tactics of the Navy. [Ref. 16 : p. 33]

The theory of strategic employment of the Navy is based on the principles of military strategy. "It examines questions of the Navy's employment in attempting to attain the primary objectives of armed conflict in ocean areas, and in those coastal sectors of continental theaters where strategic missions are accomplished with the Navy's participation." [Ref. 14 : p. 27]

Operational art of the Navy pertains to the theory and practice of preparing and conducting combat operations by naval formations. Specific naval features are studied which affect the development of the physical means of fighting in the ocean, operational employment and general naval missions. Guidance for development with other services is also studied. [Ref. 14 : p. 27]

Naval tactics encompasses the theory and practice of preparing and conducting naval combat actions. Tactics is a more independent field of naval art due to the variations of tactics that exist in determining its relationship with naval equipment, the sea environment, naval missions, naval actions, and weapon employment. [Ref. 16 : p. 34]

H. PAST WARS AND THE REVOLUTION IN MILITARY AFFAIRS

In reviewing the concepts of Soviet military thought, it is quite apparent that past war experiences have played a major role in its development. The Soviets strongly believe an in-depth examination of military history will steer them away from the danger of repeating errors of the past and aid in disclosing antiquated theories. Thus, all doctrinal and organizational development, as well as weapon technology, are scrutinized against military historical experience. [Ref. 17 : p. 11]

The Soviets view their participation in World War II from 1941-1945, an event they call the Great Patriotic War, as an invaluable depository of war experience. The study of this war has greatly influenced the development of all aspects of military science, including Naval Force Control. [Ref. 15 : p. 3] Most major Soviet military theoretical works on military science reference lessons learned from the Great Patriotic War, attempting to teach the art of war as well as instill patriotism for the Soviet state and provide justification of the defense budget. [Ref. 11 : p. 78] It is also important to re-

member that the Great Patriotic War was the last major conflict that the Soviets have participated in.

The Great Patriotic War has been the subject of thousands of books, pamphlets and articles. Soviet versions of the war portray the defeat of Hitler as due primarily to the wise and courageous leadership of the Communist Party of the Soviet Union [Ref. 11 : p. 73], thus ensuring the CPSU as the guiding force of the state.

The postwar period brought about the "revolution in military affairs", a term adopted to explain changes in the Soviet armed forces' view on warfare that resulted from the production of nuclear weapons and ballistic missiles. [Ref. 18 : p. 47] It provided a major shift in the fundamental concepts of Soviet military thought. The revolution in military affairs is composed of three phases:

1. the development of nuclear weapons,
2. the development of long-range missiles to deliver these nuclear weapons, and
3. the development of comprehensive automation of the forces and means for waging such war. [Ref. 19 : p. 15]

The first two phases occurred in the 1950's. From 1953 to 1959, the establishment of strategic nuclear weapons and the rapid development of missile technology led to radical changes which resulted in combat operations designed to contend with a nuclear environment. [Ref. 17 : p. 12] Military doctrine reflected that the might of a nation was based on the amount and types of nuclear weapons and the means of delivery. [Ref. 11 : p. 159] By the late 1960's, the assumption was made that a non-nuclear war was possible. Therefore, although nuclear weapons retained their primary status, the role of conventional weapons was increased. [Ref. 11 : p. 211]

The third phase began in the 1970's. The need to generalize and evaluate a large flow of incoming information in short periods of time as well as react to abrupt and rapid situational changes led to automation of the most labor-intensive processes. [Ref. 15 : p. 5] New and developing technology allowed automation to be integrated into a broad range of weapon systems "...as well as into the command and control network extending into the operational tactical headquarters in the field." [Ref. 17 : p. 13] The revolution in military affairs essentially began in the strategic arena and concurrently changed the operational and tactical arena as well.

I. SOVIET CYBERNETICS

KIBERNETIKA (Cybernetics) is the science concerning the laws of control, communications, and transmitting information. The basic objects of investigation by

cybernetics are the control processes in technical, biological, administrative, social, and other systems. The following theories constitute the scientific basis for cybernetics: probability, operations research, information, algorithms, automatic control, pattern recognition, and others. The technological basis for cybernetics is general-purpose and special-purpose electronic computers and equipment. Experimental, mathematical-analytical methods and the method of mathematical modelling are used in cybernetics. A series of independent scientific directions have been singled out in contemporary cybernetics, including military cybernetics, technical cybernetics, economic cybernetics, biological cybernetics, medical cybernetics, and others. (as translated from the Soviet *Military Encyclopedic Dictionary* in [Ref. 2 : p. 69]

Soviet cybernetics is the science which studies control in machines, living systems, and social processes. A control process consists of three elements: the object of control, the controlling device or control organ, and the communications channels between them. These elements combine to form a cyclical process which progresses to achieve an explicit goal. [Ref. 20 : p. 11]

The direct communications path transmits commands or controlling actions from the control organ to the object of control as well as status information through the feedback channel which leads back to the control organ. The generation of the controlling actions stems from comparing status information corresponding to the achievement of the goal with the present status. Thus, information plays a large role in a control process. [Ref. 20 : p. 12] See Figure 2 on page 18 for a simple paradigm of a cybernetic process.

A single control loop consists of one line of direct communications and one line of feedback. In reality, control processes usually require the interaction of several interconnected loops. Therefore, cybernetics is concerned with control processes occurring in complex dynamic systems that consist of large numbers of interconnected elements and subsystems which are in a state of motion, change or development. [Ref. 20 : p. 22] For example, a naval fleet can be looked at as a dynamic system. Its subsystem will be the battle groups, which in turn, consist of units and ships. The control organ is represented by fleet headquarters. This multilevel structure will have a very complicated communications system. The entire system is a characteristic cybernetic system. [Ref. 20 : p. 31]

The field of applied cybernetics which studies control of forces and means in military affairs is called military cybernetics. A more precise definition follows:

VOENNAYa KIBERNETIKA (military cybernetics) studies the general law-governed patterns of the control of troops and combat means on the basis of common cybernetic concepts. It is the theoretical basis for automation of control of

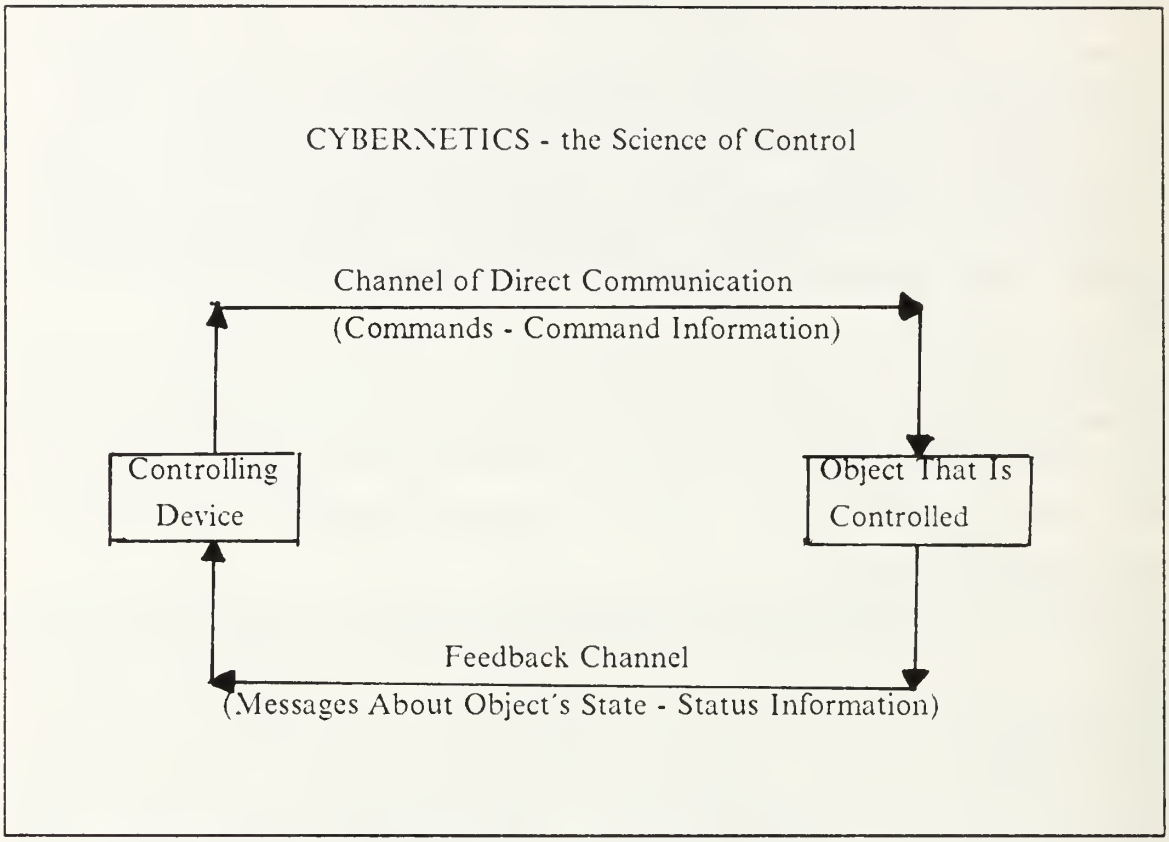


Figure 2. Simple Paradigm of a Cybernetic Process

troops (forces) and combat means. Military cybernetics started to develop at the end of the 1950's on the basis of the achievements of general cybernetics and military science. It has worked out a unified theory for controlling the armed forces with the use of automated systems of control (ASU). The theoretical basis of military cybernetics consists of the theories of military art, operations research, automated control, algorithms for military problems, and information. It is closely connected with other sciences. It is widely used in the work of commanders and staffs at all stages of troop control and for the creation of information systems, the improvement of armaments, and the preparation of the military cadre. (as translated from the Soviet *Military Encyclopedic Dictionary* in [Ref. 2 : pp. 60-61]

Soviet military cybernetics looks at the important questions of control of forces and equipment during preparation and performance of combat actions, as well as problems concerning the automation of control. It is the theoretical basis for automating and mechanizing naval force control. Its basic areas consist of information theory which involves transmittal of messages over communications channels; the theory of algorithms which studies the rules of information processing; and the theory of control devices which involves the design and operation of machines and mechanisms used for

automated information processing and the interaction between man and machine. [Ref. 21 : p. 175.] It uses the same cyclical process described above. See Figure 3 on page 20 for a diagram of a military cybernetic process.

The following concepts are included in the basic principles which are known in cybernetics:

- complexity,
- requisite variety,
- feedback, and
- the law of completion from without. [Ref. 19 : p. 68]

The definition of complexity can vary depending on the viewpoint. However, this thesis will interpret complexity as the quality or property of a system which is the combined interaction of four determinants. These determinants are :

1. the number of elements in the system,
2. the attributes of the elements in the system,
3. the number of interactions between the elements in the system, and
4. the degree of organization inherent in the system. [Ref. 22 : p. 90]

The Soviets consider both individual weapon systems and also combat units to be complex systems. [Ref. 19 : p. 8]

The more complex a system, the more difficult it is to understand and control it, as well as define its interrelationships and predict its behavior. As the number of elements in a system increases, the number of interrelationships increase, and the amount of uncertainty grows. The system is said to possess more variety than it did initially. Information can diminish variety, not because it simplifies the system, but because it makes the system more predictable. [Ref. 22 : p. 87] The law of requisite variety states that in order to control a complex sytem, the amount of variety in the control system must possess more variety than the system that it controls. [Ref. 19 : p. 69] The Soviets believe that if they command greater variety in their forces than the enemy has, and provide the skilled commanders who can utilize this variety, then they are on course to achieving victory in combat. [Ref. 19 : p. 70]

The cyclical process described previously uses a feedback channel to transfer status information to the control organ. Feedback aids in maintaining a prescribed relationship. An output of a controlled system is returned as an input. This input is measured against the value of a control variable. If the input deviates from the value past some

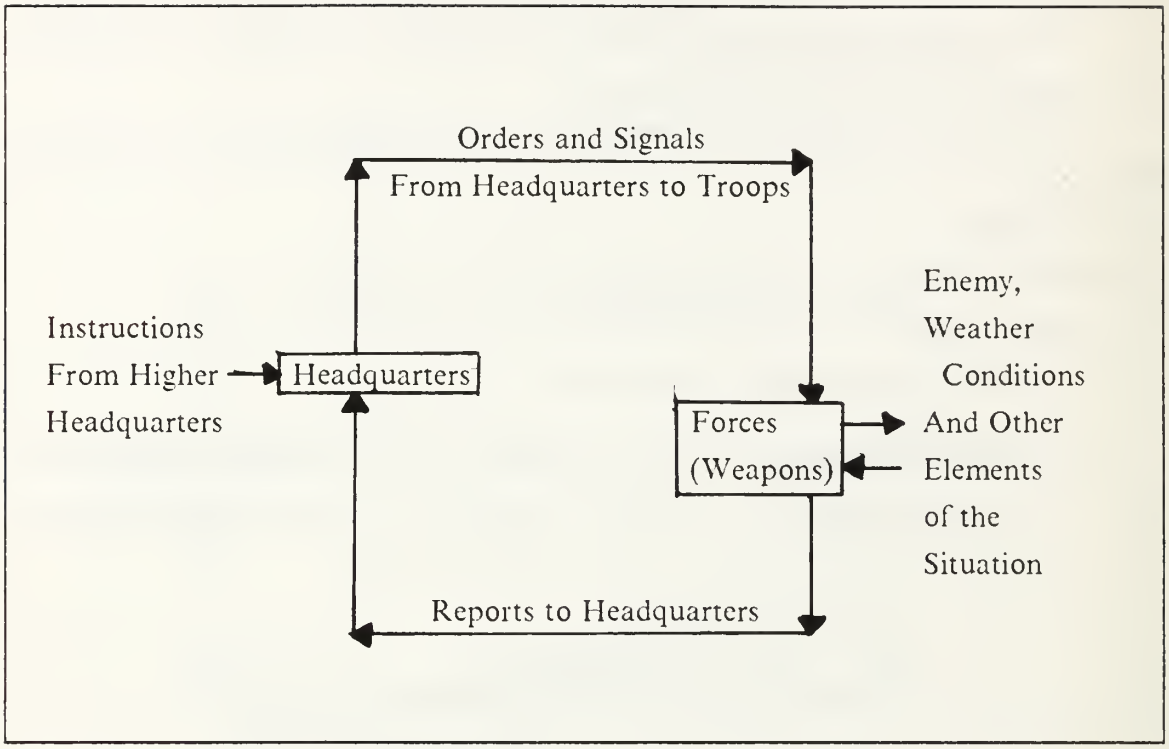


Figure 3. Basic Paradigm of a Military Cybernetic Process

predetermined level, controlling actions must be transmitted to the controlled system to correct the deviation. [Ref. 5 : p. 75] Thus, feedback is the key to controlling a system. Information can be routed back to the commander, or even a computer, to assess the results of actions taken, and if necessary, correct those actions.

The law of completion from without concerns using human reasoning to join appropriate formal control procedures with actual situations. The Soviets have put forth a great effort to match formal control procedures with real-world situations, not with the intent of telling the commander what to do but to provide him an incomplete input to the control process that must be completed by human judgement. [Ref. 19 : p. 71]

J. CONTEXT

There is one final factor that the Blue commander must be made aware of because it may affect his ability to apply this information to his naval C3 system. This factor is known as context.

Soviet military concepts are not readily understood in the West, mainly because of inadequate Western translations of the material. Most Soviet open-literature writings

have not been translated and many of the translations that have been done are either inaccurate or inconsistent. [Ref. 19 : p. 8] Context, the knowledge of a subject area in light of its source language and culture, is defined as consisting of three elements:

1. a vocabulary of the subject area in the source language,
2. a conceptual framework of the subject area in the source language (understanding the grammar with respect to the vocabulary), and
3. a perspective on how the vocabulary and conceptual framework relate to the subject area. [Ref. 5 : p. 16]

Context is highly important because of American linguistic deficiencies. Many Soviet military concepts are misunderstood by the West due to inadequate English translations of Soviet Russian language writings. In order to correctly translate Soviet writings, a translator must not only be fluent in the Russian language, he must understand Soviet military concepts and possess knowledge of Marxist-Leninist theory. The translator should, perhaps, be qualified as an "translator-analyst" of the particular topic to be translated. [Ref. 19 : p. 74] As the translator becomes more aware of context, the inadequacies in Western translations of Soviet writings should decrease.

K. CHAPTER SUMMARY

Chapter Two has been concerned with reviewing fundamental principles which are necessary for understanding the concept of Soviet Naval Force Control. Without knowledge of these principles, the Blue commander would lose essential insights into Soviet Naval Force Control and how it is applied to the Soviet Red naval C3 system. In summary, these principles are Marxist-Leninist theory, Soviet military thought, past war experience and the revolution in military affairs, cybernetics, and context.

Marxist-Leninist theory is particularly important if one is trying to understand Soviet military writings. It provides the scientific basis for control. The Soviets believe that one must know dialectical and historical materialism to control any object or process. Thus, should not the Blue commander understand these principles as well?

Soviet military thought envelopes concepts and laws that have been developed and maintained by the highest Soviet leaders. It is comprised of military doctrine (war is political and can be used by the state as a tool in order to achieve its political goals), military science (theory and conduct of armed warfare), and military art (applying military doctrine and military science to the actual forms and means of combat). An understanding of military thought becomes extremely important when viewed as the premise and basis for the operational aspects of the Soviet Navy.

Past war experience and the revolution in military affairs has been studied, extended and formalized to contribute to doctrinal and organizational development. The experiences of the Great Patriotic War have been examined at considerable extent since it was the last large-scale conflict in which the Soviets have been involved. Lessons learned from the Great Patriotic War instill remembrance of the sacrifices and destruction wrought against the Soviet people and infuse patriotism as well as vindication of enormous military expenditures. The advent of nuclear weapons and its aftermath have led to influential changes in Soviet military affairs.

Cybernetics is the science of control. The Soviets apply cybernetics to optimize control. The most important facet of Soviet cybernetics is that the Soviets have developed cybernetics into an enveloping science that not only applies to mechanical systems, but to social processes as well. Cybernetics has given the Red commander the tools to control his forces and equipment. Control is not a new concept to him. Control is part of his lifestyle, emanating from the heights of Communist Party leadership.

How can the Blue commander use the above acquired knowledge to make better informed decisions and thereby more effectively command his assigned tactical units? Of foremost importance is the fact that the Blue commander has a better perception of the Soviet commander's mindset. To transfer this perception to the Blue naval C3 system, battle group staffs. combined warfare commanders, COs, XOs, tactical action officers, department heads and all other key personnel comprising and supporting the system must also have a basic perception of the Soviet mindset. To render this perception, indoctrination and education in the fundamental principles discussed above is necessary. With this knowledge, the Blue naval command structure will better comprehend the backbone of Soviet Naval Force Control and the Soviet approach to conflict.

The need for qualified translator-analysts to translate Soviet Russian military writings is also imperative to ensure that the Blue commander, his staff and subordinate forces correctly understand Soviet military concepts. It is necessary to assess one's opponent as accurately as possible. Language barriers can cause misjudgement in perception of the enemy's approach to conflict or even his next course of action. Translator-analysts specialized in particular topic areas, such as C3 systems, should translate Russian writings to guarantee accurate and consistent interpretations.

III. NAVAL FORCE CONTROL PROCESS

A. INTRODUCTION

The concept of Naval Force Control is structured around control; the control of forces, the control of weapons, and the control of technical equipment. Without control, combat readiness and the achievement of victory in battle could not be accomplished. This chapter examines the Naval Force Control process; the general concept of control, the control system, principles of control, and management of the control process. The conclusions to the chapter will attempt to scrutinize how the Blue commander can generate a more effective C3 system by acquiring and understanding this knowledge.

B. GENERAL CONCEPT OF CONTROL

> Together with matter, motion, and organization, control is one of the basic elements of the objective world that surrounds us. [Ref. 23 : p. 56]

Control is the influence of a control organ on a controlled object. The general cybernetic concept of control defines the control process as goal-oriented cyclic input from the control organ to the controlled object in which status information is obtained via the feedback channel, decisions are made on the basis of this information, and commands are sent to the controlled object by means of the direct communications channel.

There are three major types of control:

1. control in inanimate nature, including machines and complexes of machines (technical control);
2. control in living organisms (biological control); and
3. control in human society, in collectives of people in their social life, including the conduct of armed conflict (social control).

> The operations and actions of the subject of control, which correspond to the stages of the control cycle, are the functions of control. (V.G. Afanas'yev, *The Scientific Control of Society*, Politizdat, Moscow, 1968)

The functions of control include planning, organizing, regulating, monitoring, and reporting.

- Planning - is the determination of the goal of development of the object that is controlled and the means of its attainment by working out a plan of operations. It includes forecasting (future) development and modelling of the objects that are controlled.

- Organizing - is the choosing and formulating of the structure of the production object and the strucutre of control, determining the relationships between the structural elements of the system and their interoperations.
- Regulating - is directed at maintaining the required relation between different elements of the system, at liquidating possible deviations from planned assignments in the functioning of the object that is controlled.
- Monitoring - consists of observing and inspecting the relation of the actual course and development of processes or production to the plan of operations.
- Reporting - is the handing in of the results of the execution of the plan or specific stage of its carrying out. Reporting allows one to have result information and to systematize it. Reporting also gives the possibility of using an information base for working out a program of operations for the system in the subsequent period. [Ref. 24]

Control permeates Soviet life. The Soviets believe that control is necessary for machines to operate correctly, for organisms to live, for the Soviet state to function, and for military formations to conduct combat effectively. [Ref. 25 : p. 7]

> Directing the country's armed forces and perfecting control are a crucial area of Soviet military development. Soviet military science has paid unflagging attention to this. [Ref. 26 : p. 253]

Control of forces or troops to conduct combat effectively is a branch of military art known as Naval Force (Troop) Control or *Upravleniye Silami (Voyskami)*. The definition of Naval Force Control follows:

> Naval Force (Troop) Control is the activity of commanders of operational-level units (tactical-level units, or chiefs of branches of troops and services), staffs, political organs, services, and other control organs on maintaining constant combat readiness of their naval forces (troops) for the carrying out of assigned missions. It includes:
>
> 1. continuous receipt, collection, study, representation, and analysis of data concerning the situation,
> 2. making a decision about the operation (tactical action),
> 3. disseminating missions to subordinate naval forces (troops),
> 4. planning the operation (tactical action),
> 5. organizing and maintaining mutual interaction,
> 6. preparing naval forces (troops) and staffs for combat operations and all types of support,
> 7. creating a system for Naval Force Control, and

8. organizing the monitoring of and giving assistance to commanders of subordinate operational-level (tactical-level) units, staffs, and naval forces (troops). [Ref. 19 : p. 39]

The fundamental purpose of Naval Force Control is to ensure subordinate forces are utilized with maximum effectiveness when executing assigned missions in an operation or battle. [Ref. 15 : p. 10] The purpose is satisfied by completion of the following objectives:

- Maintenance of constant combat readiness, including a high political-morale state.

Constant combat readiness means to be ready at any minute to defend the Soviet state against any aggressors. This objective fulfills the defensive posture of the Soviet state of being constantly prepared, both in peacetime and wartime, against aggressive actions, as well as inspiring forces to accomplish their missions. Maintaining constant combat readiness is the most important task of commanders and their control systems. The level of force combat readiness is the basic method of measuring efficiency of control. Indoctrination of military personnel in the spirit of constant combat readiness is highly important. Without strict discipline and an awareness of fulfillment in military duty, maintainence of combat readiness could be futile if lack of morale exists. [Ref. 21 : p. 161] Also, a high political-morale state aids in protecting forces from heavy combat losses as well as restoring combat capability in the event of the usage of nuclear weapons. [Ref. 27: p. 49]

- Comprehensive preparation of combat operations and direction of the assigned tactical missions during the course of combat.

Naval Force Control exerted on the ocean battlefield must be exercised with the intent of achieving results of successfully completing the assigned mission. [Ref. 25 : pp. 25-27]

C. THE CONTROL SYSTEM

Soviet Naval forces can only be effective if those forces have a consistent Soviet Naval Force Control system. The control system is the total interrelation of control organs, control points, communications systems, automated systems and other special systems that support the collection, processing and transmission of information.

Control organs include command, staff, directorates, departments and other permanent and temporarily created organs intended to carry out control functions at various levels. The basic control organ is the all-fleet (combined-arms) headquarters. The

all-fleet headquarters directs subordinate control organs to use their forces to execute assigned missions. [Ref. 15 : p. 48]

Control points are either fixed or mobile posts specially equipped with the technical equipment necessary for the control organ to accomplish his mission. The control organ is usually an operational-level (tactical-level) commander and his staff. The purpose of control points is to provide stable, flexible, continuous and secure command and control under any circumstances. [Ref. 25 : p. 96]

The principal control points are command posts. To ensure reliability, survivability and rapid restoration of command and control, alternate command posts are set up in case the main command post is disabled. [Ref. 15 : p. 51] Control points consist of communications centers to provide information within and between control points, and support, security and service groups which arrange security, defense and technical assistance for the post. [Ref. 15 : p. 52] In the Soviet Navy, there is a command post for a ship, a command point on a flag ship, and a command post for a fleet or flotilla. [as trans. from *Soviet Military Encyclopedic Dictionary, 1983* in Ref. 19 : p. 102]

The communications system is the technical base for the Naval Force Control system. It is responsible for transfer of information between control points and between the elements of the control points.

> The communications system may consist of: a control (regional) communications net, control point communications centers, command communications lines, technical control centers, courier-postal communications centers and stations, reserve communications manpower equipment, and other elements. [Ref. 15: p. 53]

The basic requirements that a communications system must meet are constant combat readiness, stability, high mobility, necessary capacity, and maintenance of reliability, secrecy, and security of transmission of information. [as trans. from *Soviet Military Encyclopedic Dictionary* in Ref. 19 : p. 95] The communications system must allow the commander and his staff to be continually informed of the situation and react to changes in a timely manner. [Ref. 25: p. 109]

The revolution in military affairs has placed greater demands upon the efficiency and effectiveness of control, and also on the level of operational and tactical thinking. Integrated automation of the control process makes it possible for the Naval Force Control system to meet those requirements which have been placed on it by increased combat capabilities. [Ref. 27 : p. 3] Automation is the most effective means of improving the efficiency and effectiveness of control.

There are three basic types of automated control systems:

1. Automated weapons control system - designed to control weapons and weapons systems and increase their effectiveness in executing combat missions. [Ref. 15 : p. 56]
2. Special-purpose automated systems - these system include missile-attack warning, nuclear detonation data collection and processing, and radiation and chemical situation systems; reconnaissance systems; and hydrometeorological systems. [Ref. 15 : p. 57]
3. Automated systems of control of forces (automated troop control systems) - designed to automate collection, transmission and processing of information, to complete information and estimation tasks, to conduct mathematical modeling of operations and predict situations in support of basic control processes. [Ref. 15 : p. 57]

Automated systems of control of forces (ASUVs) are being developed to meet the increasing requirements of stability, continuity, efficiency and security of controlling forces. Due to growing scope and intensity of combat operations, time becomes the most important factor in decision making. ASUVs augment the human factor in battle management. They provide management of combat data at a much greater rate than humanly possible. Thus, the use of ASUVs can enhance tactical decision making. The Soviets also attempt to program ASUVs with canned variants to different combat situations. The commander can process continuously updated situational information and then choose a canned recommendation. [Ref. 28 : pp. 107-108]

D. PRINCIPLES OF NAVAL FORCE CONTROL

The principles of Naval Force Control are general and basic rules that give recommendations to the commander and his staff to increase the effect of practical control activities. These principles are interrelated. They include:

- one-man command;
- centralization of control in all component elements with retention by subordinates of the possibility to show initiative in determiing the means of carrying out the mission assigned to them;
- firmness and persistence in executing decisions that have been made by superiors;
- efficient and flexible response to situation changes;
- continuity and security; and
- personal responsibility of the commander for decisions made, for the effective use of his forces, and for the results of the execution of assigned missions. [Ref. 19: p. 112]

The principle of one-man management gives the commander complete authority over forces subordinate to him, as granted him by the laws of the Soviet state and gov-

erned by regulations and the orders given by his superior officers. [Ref. 25 : p. 121] The commander implements the policy of the CPSU and executes the decisions of the Party and the government. Therefore, he bears total responsibility for all matters concerning the activities of his forces; morale, discipline, military and political training, combat readiness, and combat activity. [Ref. 29: p. 724]

Centralization of control implies a situation where the superior command element unites the various branches of the forces under its command, assigns missions and, in many cases, provides coordination of the forces to achieve the common combat goal in accordance with a unified plan. [Ref. 25 : p. 122] Centralization becomes essential when involved with extremely destructive forces such as nuclear weapons or when conducting coordinated missile attacks. Battle management in naval warfare can also involve heavy centralization to coordinate the efforts and requirements of a battlegroup under constantly changing conditions. [Ref. 14 : p. 67]

At the same time, the complex and rapidly changing conditions of combat require that subordinate commanders take the initiative and make independent decisions concerning tactical actions of their forces. Thus, centralization and decentralization both play important roles in combat and must be appropriately combined, depending on the mission and situation conditions. [Ref. 15 : pp. 42-43]

The principle of firm and persistent implementation of decisions demands that a commander be determined in pursuing his objectives. Execution of mission goals must be enacted despite difficulties and obstacles that may arise. [Ref. 30 : p. 18] Therefore, the commander must provide the following:

> The commander must make a courageous decision, persistently implement it, retain control of the subordinates in their hands, preserve organization, and accomplish the tactical mission in any difficult situation. [Ref. 25 : p. 43]

The commander must have the ability to be flexible and to promptly respond to changing situations. His control system must allow for smooth transition form one combat method to another. This faculty must be a quality of the commander's personality and his control system, and can be further developed through training. Training exercises and maneuvers provide the commander frequently complex and fluctuating circumstances. [Ref. 30 : p. 18]

Firmness and flexibility are possible only when the commander has "the big picture"; constant and up-to-date information of the actual situation, correct forecasting of it, the

objective analysis to make the decision based on this information, and the ability to mobilize his forces to carry out his decisions. [Ref. 25 : p. 44]

Continuity of control ensures constant communications with forces, constant situational information to the commander and his staff, and the ability to exert influence on combat operations using available forces and resources. Continuity can only be attained by the survivability of the Naval Force Control system [Ref. 25 : p. 44] A solid control system should be employed by constructing an alternate control system, dispersing command posts, and setting up alternate and reserve communications systems. [Ref. 30 : p. 19]

Security of control specifies preventing leakage of information concerning the strength, organization, location, missions, condition of material and training, before and during operations whether peacetime or wartime. [Ref. 31 : p. 19] The essence of security is to uphold secrecy to retain all command and control measures from the enemy. [Ref. 25 : p. 45] Usually, the greater the security of communications, the higher the forces' command and control secrecy. Security can be enhanced by concealing the movements of the command post and limiting the number of personnel who are involved in planning of combat operations. [Ref. 29 : p. 724]

The principle of personal responsiblity of the commander stresses the fact that the commander must answer to the CPSU Central Committee and the Soviet government for the continual combat and mobilization readiness of his forces as well as his achievement of assigned missions. [Ref. 15 : p. 44] Only the commander has the authority to make the decision (within the guidance of his superiors). Thus, the commander must be held personally responsible for his decision.

Principles of control have a historic character and are subject to change. Principles can change in accordance with further development of scientific and technical progress, more rational organization of work of staffs or headquarters, and new methods of accomplishing basic missions of control [Ref. 31 : p. 66]

E. MANAGEMENT OF NAVAL FORCE CONTROL

In order for a commander to control his forces in battle, and thus, fulfill the objectives of control, certain functions must be administered. These functions are performed both in the preparation of and during combat operations. [Ref. 25 : p. 26]

- Acquiring and processing situation information.

Information must be continuous, reliable, timely, and exist in the necessary volume to provide positional/situational data on enemy forces, own forces, and also data on present conditions of conducting the operation.

- Making (or amplifying) the decision and planning combat operations.

A decision is the result of the creative thought and will of the commander and defines the objective of the combat operations and the forces, resources, procedures, and times for achieving it and also the missions of his subordinates. [Ref. 25 : p. 31] The decision is crucial to control. Control decisions in the Soviet Navy are now aided by computers. Combat data can be entered and processed to provide recommendations for decision-making by the commander. [Ref. 32 : p. 18] : p. 31]

The decision is also the basis for planning. Planning consists of detailing and specification of the decision by the commander's staff and the chiefs of the branches of forces and services under the leadership of the commander; sequences, methods and time of execution by forces, distribution of forces and their efforts, supplies and provisions needed, etc. [Ref. 31 : p. 17] Planning begins when the commander makes his decision and concludes with the formulation and approval of an operation or battle plan. There are two methods for planning combat operations; sequential and parallel. Sequential planning involves planning of combat operations separately at each command level; as planning is completed at one echelon, the mission is disseminated at the next subordinate echelon. Parallel or concurrent planning involves planning operations in which subordinate and higher echelons start working simultaneously, at their own level, on planning the upcoming operation. This method allows rapid planning, which becomes an advantage when time is limited. [Ref. 25 : pp. 229-230]

- Disseminating tactical missions to forces and organizing their coordination.

Forces must obtain the specific combat problem and have time to comprehend and prepare for the execution of the assigned mission. For this to happen, timely decison making is necessary as well as skillful selection of the most reliable and effective method of disseminating tasks under the given conditions and by monitoring the passage of operation documents and command signals and their correct understanding by subordinates. [Ref. 15 : p. 11]

- Comprehensive support of combat operations.

This function creates the conditions necessary for subunits of the branches of forces to successfully execute their tactical missions against the enemy. [Ref 25 : p. 36] The

Soviets divide support into four types: combat (operational), special, rear, and technical. Combat support includes reconnaissance, defense against nuclear weapons, physical security, radioelectronic warfare, cover and deception, (maskirovka), and engineer support. Special support contains subjects such as topogeodesic and hydrometeorological support. Rear support includes transportation, medical support and housing. Technical support covers rocket, artillery, and motor vehicle engineering. [Ref. 28 : p. 106]

- Organization and execution of political work with forces.

> The specific mission of this function is to ensure the formation of strong morale in each officer, seargent, and soldier; their complete understanding and implementation of the policy of the CPSU and the Soviet government; maintenance of high troop combat readiness; knowledge by personnel of the objectve and the nature of the war being waged and of their specific mission; strengthening of their psychological state; certainty of success, courage, and an urge for the offensive. [Ref. 25: p. 37]

- Preparation of forces for forthcoming combat operations.

This function once again signifies the importance Soviets have assigned to combat readiness through practice and training as well as directing and controlling forces during the course of combat. The subordinate forces must understand the mission exactly in the same manner as the commander assigned it. There should be no varying interpretations of the mission and it should be clearly specified who is doing what, where, and when. [Ref 21 : p. 185]

- Organization and maintenance of constant tactical command and control.

This function establishes the need for a control system [Ref. 25 : p. 39]; control organs to organize missions and goals, an appropriate arrangement of control posts, necessary communications equipment between the control organs and subordinate forces, and automated systems to aid in controlling complexity and time factors.

- Monitoring forces' readiness and their execution of tactical mission.

By monitoring and assisting subordinate commanders, staffs, and forces, the most effective execution of missions can be achieved and mistakes can either be averted or quickly corrected. [Ref. 15: p. 12] Monitoring consists of studying the actual situation among the forces and eliminating any deficiencies or discrepancies discovered. [Ref. 25 : p. 39]

F. CHAPTER SUMMARY

Control is the keyword of Soviet society. It is a process which is relevant in all aspects of Soviet life. The goals of the Communist Party and its ideological commitment

to the state are accomplished through control. The Soviets believe that without control, the hold of the CPSU would weaken, chaos would ensue, and society could not exist in an organized and effective manner.

The CPSU maintains stringent control of the Soviet armed forces through the concept of troop control; more specifically, the CPSU controls its naval forces through the concept of Naval Force Control. Naval Force Control is a process which functions to create and maintain combat readiness, fighting efficiency, and the ability to control forces during execution of assigned missions.

The principles of control include one-man command, centralization, firmness and flexibility of control, continuity and security, and personal responsibility of the commander. These principles become harder to observe and enforce as modern combat becomes more complex with the use of more destructive weapons, automated computer systems, and the faster pace of the battle.

Management of control gives the commander the capability to control his forces in combat. To correctly assess the combat situation and provide the desired action to be executed by his subordinate forces, the commander and his staff must have the ability to collect, process and study situational data. He uses his decision making process to select the best course of action, then plans the operation, assigns the mission to his forces and organizes the coordination of the mission. Subordinate forces should clearly understand the mission exactly as the commander perceived it. Support of the combat operation must also be provided, such as logistic, technical or medical support, and the political and morale preparation of forces. A control system consisting of the commander and his staff, control posts, and interconnecting communications equipment should be organized and maintained to provide tactical command and control for the mission. Finally, the execution of the mission must be constantly monitored and corrected or revised as necessary.

The complex conditions of modern combat operations, the fast and changing pace of the battle, the tremendously destructive weapons of today, and the decreasing time limit to act in situations force the commander to make timely decisions under much duress. Integrated automation assists the commander in concluding the decision-making process by accepting and synthesizing combat data to produce recommendations. These recommendations are based on Soviet canned responses to various combat situations. This promotes more efficient decision-making by commanders, especially those weak in the area. Thus, automated systems, including ASUVs that enhance human capabilities

in battle management, are viewed by the Soviets as having the ability to raise overall combat operational effectiveness. Yet, ASUVs can also stifle initiative by training the commander to choose a canned response vice thinking for himself. This may become evident when a seldom occurring or new combat situation arises for which there are no appropriate canned responses. Centralization of forces allows the use of resources to be flexible and meet diverse requirements. It is especially important and used rigidly by higher echelon commanders when operational plans involve the use or coordination of highly destructive weapons, such as nuclear weapons or missiles. Decentralization of control is also important under appropriate conditions. Quickly changing, offensive operations in the naval arena may demand increased initiative on the part of unit and, or ship commanders. Of course, in the Soviet Navy, initiative carrys a price tag; the commander is held personally responsible for his actions, the actions of his subordinate forces, and the accomplishment of the mission. He is supposed to act within the goals of the Communist Party and his military superiors. Penalties for deviations could be severe enough to quelch ideas of initiative when the situation needs it and enforce following the operational plan. Also, decentralization is not a concept that is allowed frequently by the high command ashore controlling the commander at sea. This infrequency in transferring control of operations to the afloat commander could make him indecisive, unwilling to use initiative and tend to adhere to the course of action selected by the ASUV.

Americans tend to define initiative in terms of creativity and aggressiveness. Perhaps the Soviets define initiative as the ability to adapt to changing situations and make appropriate decisions based on the laws of armed warfare. In other words, the Soviet commander should be able to deal with any situation because he has been given ASUVs and a sound background in military thought that allows him to make the necessary decisions. Even in decentralization, the higher echelons remain in control. The Soviet Union is not interested in creative, imaginative commanders. They are interested in building a strong system of firm, capable leaders who fulfill the goals and objectives of the state.

The Blue commander and his forces will need to comprehend the Soviet concept of control and its application to Naval Force Control. Control is the all-encompassing strength of the Soviet Union. Indoctrination into the general concept of control and the principles and management of Naval Force Control will permit Blue forces a better

perception of how the Soviets control and apply the Red naval C3 system in the execution of an assigned mission.

IV. SOVIET NAVAL FORCES

A. INTRODUCTION

In understanding the Soviet naval C3 process, it is necessary to examine their naval forces. This chapter briefly outlines the overall structure and organization of the Soviet Navy in peacetime and wartime, as well as the individual Soviet fleets. The missions of the Soviet Navy are discussed and a more specific examination of naval forces is made, including submarines, naval aviation, principle surace combatants, and amphibious and mine warfare forces. Future trends in the Soviet Navy are also examined. The conclusions to the chapter attempt to answer questions of how the Blue force commander can generate a more effective C3 system by acquiring and understanding this knowledge.

B. THE SOVIET NAVY WITHIN THE SOVIET STATE

The Blue force commander must understand the structure of the Soviet Navy; both the peacetime and wartime command and control structures. The Soviet Navy is one of five services that compose the Soviet Armed Forces. The other services include the Strategic Rocket Forces, the Ground Forces, the Air Forces and the Troops of National Air Defense.

1. Peacetime Command and Control Structure

> Supreme leadership of the USSR's Armed Forces is vested by the Soviet Constitution in the CPSU and in the highest bodies of the Soviet Government - the Presidium of the Supreme Soviet and the Council of Ministers. Party dominance of the armed forces is assured through its decisionmaking authority and power over personnel appointments. [Ref. 33 : p. 18]

The Soviet Union has two governing structures, the Communist Party of the Soviet Union, and the nominal government represented by the Council of Ministers. Both structures place great emphasis on defense. Both structures are also linked together. Key government officials are Party members, under the control of Pary directives. Also, Soviet policy is formulated by both Party and government representatives in decision making committees. In general, the Party has the authority to formulate policy. The government ratifies Party policy and proceeds in its implementation. [Ref. 34 : p. 2]

The CPSU and its Central Committee are directly involved with the daily control of Soviet military affairs. The CPSU is headed by the Politburo, an inner clique of

about two dozen officials from the Party's Central Committee. The Politburo is the USSR's top decision making committee and the final authority on all national decisions. The Central Committee does not have decision making authority; it is a body of over 400 members that meet several times a year for missions of socialization and personal status rather than policymaking. [Ref. 35 : p. 119]

Theoretically, the Supreme Soviet is the legislative arm of the Soviet state. "In practice this body is ornamental and serves as a facade. However, membership in this group does carry certain prestige and helps to establish position." The Defense Minister, his deputies and commanders of forces abroad, militry districts, and fleets serve as members of the Supreme Soviet. [Ref. 18 : p. 118] The Council of Ministers consists of about one hundred ministers who supervise the production and implementation of all industrial goods and services in the Soviet Union. [Ref. 35 : p. 120] The Council directs all aspects of Soviet economic development and organizes the management of industry, transportation, construction, and communications. The Council provides overal direction for armed forces development and civil defense, and ratifies military manpower issues. [Ref. 34 : p. 11]

In peacetime, the Soviet Navy and the other services are administratively subordinate to the Defense Ministry. The primary role of the Defense Ministry is to coordinate and manage the actions of its main directorates with those of the armed forces. [Ref. 29 : p. 725] The Defense Minister, who is a military officer, is in charge of all military forces and defense activities. His responsibilities involve officer recruitment and conscription of enlisted presonnel; equipping the forces with weapon systems and military material; developing military strategy, operational art, and tactics; training the forces; and ensuring high standards of military discipline and political loyalty. The Defense Minister maintains control of the armed forces via three first deputy ministers and eleven deputy ministers of defense. The first deputy ministers include the Chief of the General Staff, the Chief of the Warsaw Pact Forces, and the Chief of the Army. Five of th eleven deptuy ministers are Commanders-in-Chiefs (CINCs) of the five services. [Ref. 33 : p.18] The Commander-in-Chief of the Navy, like the other CINCs, are responsible for peacetime administrative management. The Navy CINC holds little or no control over the operational deployment of naval forces. [Ref. 29 : p. 725]

The Main Political Directorate is the prime tool that the Central Committee of the CPSU uses to exercise political control of the armed forces. The primary objective is the implementation of Party policies in the military, incorporated in decrees and orders

issued by the Chief of the Directorate. This Party instrument infiltrates all headquarters of Soviet military forces down to the company level. Political officers are trained and directed to indoctrinate all personnel, build morale programs, and assure political reliability. [Ref. 13 : p. 2-6]

The Chief of the General Staff is next in command after the Defense Minister. The General Staff is the highest staff body of the Soviet armed forces and exercises peacetime force management. Principal responsibilities include devising plans for the development and employment of the military and ensuring forces are maintained at a high level of combat readiness. [Ref. 29: p. 725]

The General Staff is directly subordinate to the Main Military Council. The Main Military Council, chaired by the Defense Minister, is the highest controlling authority in the military chain of command and is concerned with the strategic direction and leadership of the Soviet armed forces. [Ref. 18 : p. 99] Other members of the Council are the Chief of the General Staff and all of the Deputy Defense Ministers (including the Navy CINC). [Ref. 29 : p. 725]

The Main Military Council is subordinate to the Defense Council, the highest politico-military decisionmaking body. The Council unifies Soviet leadership, both military and civilian, and provides centralized direction to the state economy and to military operations. [Ref. 13 : p. 2-1] The Defense Council supervises the country's preparation for war and ensures plans for mobilization, transportation, and manpower meet the requirements for war at all possible degrees of intensity. "It has the power to form new staffs, create new military districts, or change the entire structure of the Soivet Armed Forces." [Ref. 18 : p. 99] In peacetime, all strategic forces are under the operational control of the Defense Council. The Council is chaired by the General Secretary of the CPSU and members include the Defense Minister, the Chief of the General Staff, and a number of Party and state officials. [Ref. 29 : p. 725]

The Main Operations Directorate of the General Staff exercises operational control over the activities of the Soviet armed forces in peacetime. Soviet home-based fleets and squadrons deployed overseas are controlled by the Main Operations Directorate through the Main Naval Staff. (In peacetime, the Trans-Causcasian Military District Commander controls the Caspian Flotilla.) [Ref. 29 : p. 725]

2. Wartime Command and Control Structure

In time of war or general mobilization, significant changes are made to the command and control structure. Figure 4 on page 40 reflects the high command struc-

ture changes. [Ref. 36: p. 11] These changes must be rapid and efficient transformation of a peacetime national security organization into a military operational command capable of achieving all major political and military objectives in a general war. Shifting to wartime operations will incur minimal organizational disturbances and few additions to membership. [Ref. 33 : p. 19]

The Defense Council would be converted to the State Defense Council (GKO), whose main responsibility is to guarantee the centralized direction of all military and political actions of the country. Membership would expand to include representatives of the highest Party, state, and military leadership. The Council would be chaired by the General Secretary of the Soviet Union, functioning as the Supreme Commander-in-Chief of the Soviet armed forces. [Ref. 29 : p. 725]

The Supreme High Command (VGK) or *Stavka*, would replace the Defense Ministry and the Main Military Council. Members would include the General Secretary, the Defense Minister, the Chief of the General Staff and other first deputies of defense, the Chief of the Main Political Directorate and the armed forces' Commanders-in Chiefs. [Ref. 33 : p. 20] The Supreme High Command would be formed strictly for the strategic direction of the war. The General Staff would become the operational staff and executive agent of the Supreme High Command, incorporating the Main Naval Staff. The Main Operations Directorate of the General Staff would draft strategic operational plans for review and approval by the *Stavka* VGK, and would be responsible for ensuring timely execution of the plans by operational commanders. [Ref. 33 : p. 21]

In the late 1970s, the Soviets divided the USSR's territory and periphery into general areas of potential conflict. These areas are called theaters of military action or TVD (*Teatr voyennykh deystviy*). [Ref 29 : p. 725] The focus of operational planning is at the level of the TVD. The preparation of a TVD is established during peacetime; construction of transportation routes, airfields, naval bases, etc. Theaters are also "activitated" for training and exercises. Preparation continues in the course of war as forces are mobilized and deployed on a TVD basis. [Ref. 37 : p. 3]

In wartime, the Soviets engage intermediate High Commands of Forces (HCF) in TVD areas that would be under the influence of the *Stavka* VGK. HCFs are responsible for ensuring centralized control of strategic planning and decentralized battle management, and directing subordinate forces. The TVD HCF is a combined arms command, and thus, subordinate forces include ground, naval, and air assets. [Ref. 33 : p. 21]

Maritime and ocean TVDs (*morskoy (okeanskiy) teatr voyennykh deystviy*) are defined as areas of water and space in which naval operations can take place during wartime. The entire globe is not divided into MTVDs; they are limited to waters surrounding Eurasia. [Ref. 38 : p. 32] MTVD areas include the Northern Seas (Arctic), the Baltic Sea, the Black Sea, the Mediterranean Sea, the Sea of Japan, and the Kamchatka Sea. MTVDs can be integral parts of a land TVD. Thus, naval forces could be either independently employed under the control of the respective martime or ocean TVD, or in conjunction with land TVD forces. The three ocean TVDs (OTVD) cover the Atlantic, Pacific and Indian Oceans. The OTVD is where strategic missions are carried out by the Soviet Navy. [Ref. 29 : pp. 725-728]

MTVDs are comprised of zones. These zones are smaller regions where a specific operation is planned or a specified condition is expected to take place at a certain time. The four Soviet fleets provide the naval forces that operate in zones of the MTVDs. OTVDs do not contain zones of operation but can be divided into quadrants. [Ref 38 : p. 12] There are no permanent commanders of MTVDs; commanders and their command posts and forces are assigned to MTVDs or zones of MTVDs. [Ref. 38: p. 9]

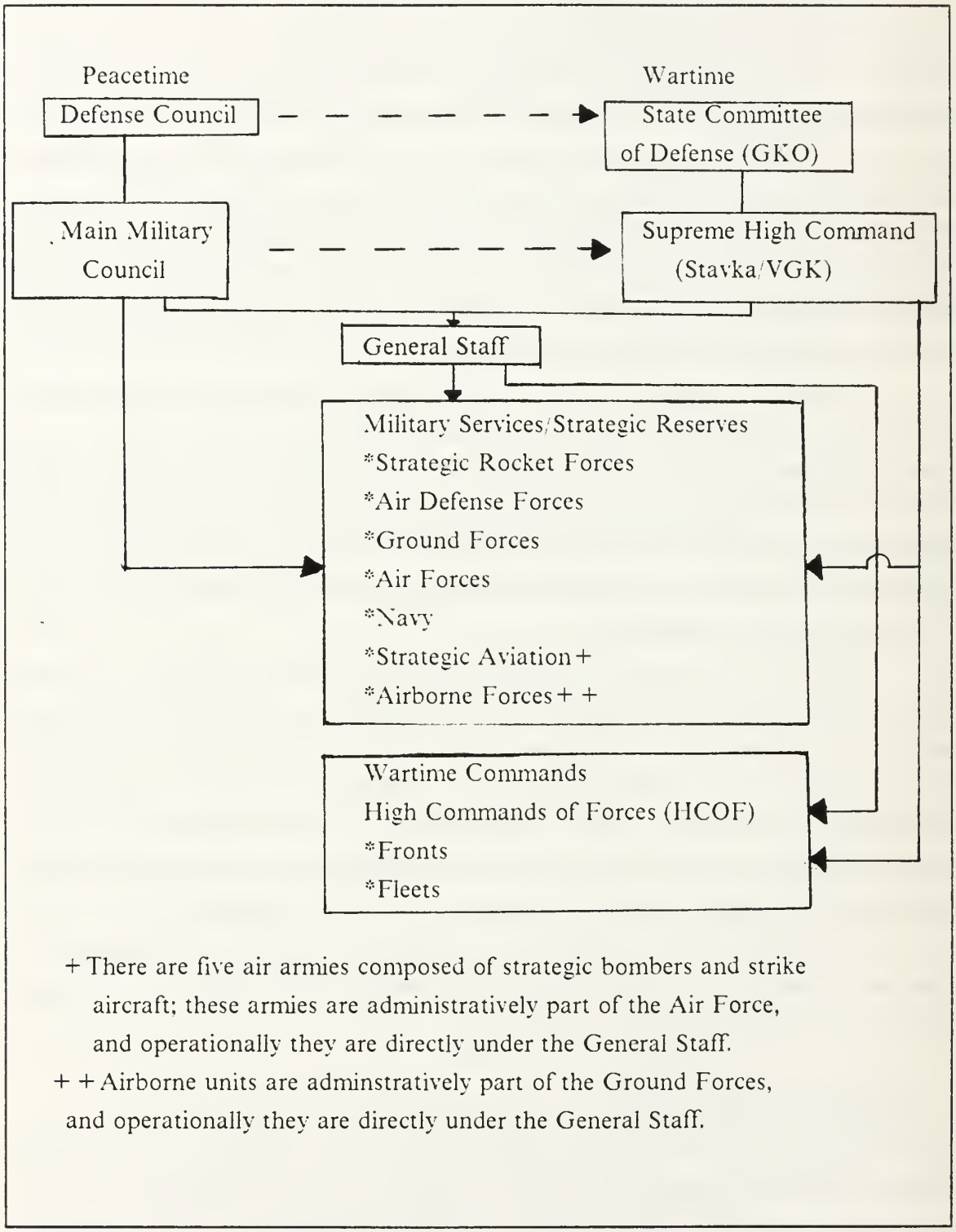
3. Soviet Navy Organization

The CINC of the Soviet Navy is also a deputy minister of defense. He is the chief advisor of the Defense Minister on naval policy. Several deputy CINCs support the Navy CINC, including a First Deputy CINC, a Chief of the Main Naval Staff which is involved in current operations and long-range planning, and a Chief of the Political Directorate. Not all deputy CINC responsibilities have been identified by Western sources. Known principle areas of responsibility include combat training, naval education, rear services (logistics) and shipbuilding and armaments. [Ref. 36 : p. 15]

The four fleet commanders and the commander of the Caspian flotilla are directly subordinate to the First Deputy CINC. See Figure 5 on page 41 for a diagram of Soviet Navy organization. [Ref. 36 : p. 15]

C. SOVIET NAVAL FLEETS

Although the Soviet Union has almost 28,000 miles of coastline, it has very few ports. Most of the coast is barricaded by ice for part or all of the year and most of the important Soviet naval bases have to be constantly kept "open" by icebreakers in the winter. Only the Black Sea offers warm and ice-free ports. [Ref. 39 : p. 253] Geography increases the impact of this handicap. Territory accessible to sea avenues are located at only four points of the country. These four points--two from inland seas (the Baltic



+ There are five air armies composed of strategic bombers and strike aircraft; these armies are administratively part of the Air Force, and operationally they are directly under the General Staff.

++ Airborne units are adminstratively part of the Ground Forces, and operationally they are directly under the General Staff.

Figure 4. Soviet High Command (adapted from Ref. 35: p. 11)

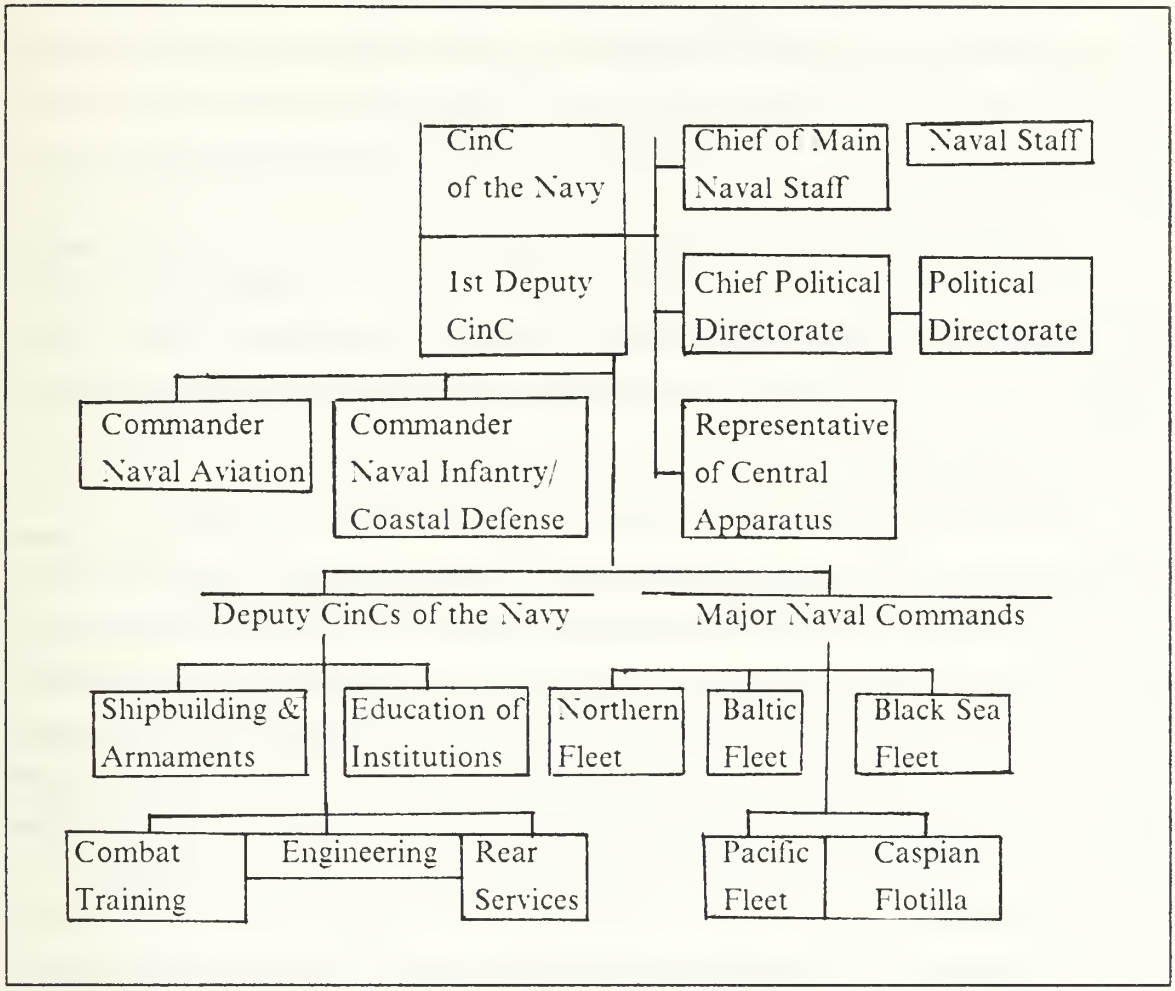


Figure 5. Soviet Navy Organization

and Black Seas). one on the Arctic Sea and the other in the Far East--are separated by vast distances. These point also constitute the home-based location of the Soviet Navy's fleets. The four fleets are not only cut off from each other by distance but are located in recessed ports in relation to the ocean. Narrows or straits of various widths must be passed in order to reach the open sea. [Ref. 40 : p. 18] Therefore, in wartime, the Soviet Navy's fleets are denied the power of concentration of forces by easily combining units from different fleets, and must pass throug narrows or straits when entering or leaving ports that can be placed under enemy surveillance.

The Soviet Navy consists of four major fleets: the Northern Fleet, the Baltic Fleet, the Black Sea Fleet, and the Pacific Ocean Fleet. One flotilla also exists; the Caspian Flotilla which is a remnant of the 12 lake, river, and sea flotillas that were employed

during World War II. [Ref. 36 : p. 17] In times of peace, fleet commanders report directly to the Main Navy Staff and maintain operational control of all general purpose afloat and ashore forces within their fleet areas. However, in wartime, the fleet CINCs become the naval component commanders of the combined arms high command in their corresponding TVD. [Ref. 33 : p. 81]

Fleet organization consists of surface, subsurface and air assets, naval infantry, coastal defense, and naval base commands. Naval forces are organized into *eskadra* (task force), *diviziya* (flotilla), *brigada* (squadron), and *divizion* (division). The number of assets assigned to each group is dependent upon the mission of the group. [Ref. 13 : p. 9-4]

1. Northern Fleet

The Northern Fleet is mainly based in the Kola Peninsula and White Sea areas. Fleet headquarters is located at Severomorsk. The Northern Fleet is the fleet that is least encumbered by geography and has direct access to the Atlantic. Therefore it is responsible for wartime operations in the Atlantic and Arctic Oceans. Northern Fleet bases are usually free from ice throughout the year but operating conditions can often be very bad. [Ref. 41 : p. 121] The Northern Fleet comprises almost 50 percent of the Soviet Navy's submarines, some 26 percent of the surface warships (frigates and larger units) about 27 percent of the naval aircraft, and 26 percent of the naval personnel.

2. Baltic Fleet

The Baltic Fleet is responsible for operations in that specific area. Its access to the high seas is by way of the Danish Straits and then either south through the English Channel or north between Scotland and Norway. These straits are controlled by NATO forces; therefore, during times of conflict, Atlantic operations are left to the Northern Fleet. Primary missions of the Baltic Fleet during wartime would embody supporting army operations and conducting amphibious and other naval operations with the goal of attaining control of the Danish Straits and denying the use of the Baltic Sea to enemy surface ships. Forces are comprised of 12 percent of the Navy's submarines, 16 percent of its surface warships, 16 percent of its aircraft, and roughly 19 percent of its personnel. Fleet headquarters is situated at Baltiysk near the Lithuanian port of Kaliningrad. [Ref. 36 : p. 19-22.] The Baltic Sea ports are icebound through much of the year.

3. Black Sea Fleet

The Black Sea Fleet is responsible for naval operations in the Black Sea. This fleet also provides surface warships and air assets for operations in the Mediterranean

Sea as the Fifth *Eskadra*. [Ref. 36 : p. 22] To enter the Mediterranean, the Black Sea Fleet has to navigate the Dardanelles, and from there, leave by either transiting the Suez Canal or the Straits of Gibraltar. [Ref. 41 : p. 121] The Black Sea Fleet has 26 percent of the Soviet Navy's major combatants, nine percent of its submarines (no nuclear or ballistic missile subs), 27 percent of its aircraft and 20 percent of its personnel. Fleet headquarters is located at Sevastopol. [Ref. 36 : p. 23]

4. Pacific Fleet

The Pacific Fleet is the largest of the four Soviet fleets. Approximately one-third of the submarines of the Soviet Navy belong to the Pacific fleet, along with 29 percent of the major surface warships, 30 percent of the naval aircraft, and 33 percent of the manpower. The Pacific Fleet also has the largest operating area of any of the fleets. Responsibilities include operations throughout the Pacific, providing most of the ships that deploy to the Indian Ocean, and defending the Soviet Siberian coast. [Ref. 36 : pp. 23-25] The Pacific Fleet is based at Vladivostok but also uses naval ports at Sovietskaya Gavan, Magaden, and Petropavlovsk on the Kamchatka Peninsula. The fleet's SSBN force operates out of the port of Petropavlovsk while most of the larger warships are based at Vladivostok, Sovietskaya Gavan and the newer port of Korsakov on the southern end of the island of Sakhalin. The Pacific Fleet can access the ocean by the Tsushima and La Perouse Straits. Two other straits--the Tsugaru and Korean Straits--are controlled by Japan and South Korea respectively, but cannot be expected to be blockaded in times of conflict due to the dependence of Japan and Korea on maritime trade that transits those straits. The Pacific Fleet also suffers from icebound ports in winter but manages to remain operational via extensive ice-breaking efforts at Vladivostok and Petropavlovsk. [Ref. 41 : p. 121]

5. Caspian Sea Flotilla

The Caspian Sea Flotilla is a small, limited patrol force operating in the Caspian Sea. A canal built from the Black Sea allows the transfer of ships no larger than destroyers to enter the inland sea. The Caspian Sea Flotilla consists of five frigates, five patrol ships, 20 patrol craft, 25 minesweepers, 28 landing craft, several auxiliary ships, no aircraft, and about 4000 personnel. [Ref. 36 : p. 23]

D. MISSIONS OF THE SOVIET NAVY

Soviet naval missions are stated as:

1. deterrence in peace and war, primarily through strategic submarines; related to this is the role of providing naval protection for SSBNs,

2. protection of the homeland against seaborne attack from U.S. CVBG forces, including air strikes, cruise missiles fired from naval platforms, and amphibious invasion,
3. destruction of Western SSBNs,
4. destruction of the enemy's ASW threat,
5. interdiction of the sea lines of communications, and
6. naval combat support of ground forces. [Ref. 42 : p. 27]

The Soviets maintain the largest ballistic missile submarine force in the world. Its mission is strategic attack, or more clearly, nuclear strike against the enemy. Two-thirds of these submarines are fitted with long-range sea-launched ballistic missiles (SLBM) that allow them to remain in their homeports while still completing their mission of striking targets in the United States. [Ref. 43 : p. 12]

The role of protecting the strategic submarine force at all times is a top priority for all Soviet naval forces. This "pro-SSBN" requirement involves protection of all forward-deployed submarines throughout their mission profile, whether the submarines are leaving or returning to base, are vulnerable to attack by U.S. SSNs, or are on station (where each SSBN normally may have two escorting SSNs). This function also entails protection of the SSBN force that stays in home waters (Delta and Typhoon classes) or patrols under the Arctic ice fringe. [Ref. 42: p. 28]

> The mission of providing for the strategic defense of the Soviet Union centers on eliminating naval threats approaching within weapons range of the Soviet homeland. [Ref. 43: p.14]

Soviet naval forces are tasked with protecting the Soviet homeland from three types of threats: deep strategic nuclear strikes or "operational" strikes against Soviet ground and air forces by aircraft launched from aircraft carriers, naval platforms that are equipped with cruise missiles, and "strategic scale" amphibious landings (defined as landings that open major new ground fronts). [Ref. 42 : p. 29] The Soviet requirement for an anti-carrier battle group capability will definitely remain a high priority as the U.S. Navy strengthens its carrier battleforce in numbers as well as in conventional and nuclear Tomahawk missiles.

Destruction of Western SSBNs requires the Soviet Navy to have the open-ocean ASW capability to locate patrolling U.S. SSBNs. In the early 1960s, an attack on a Soviet SSBN would have triggered a nuclear response, but that is probably no longer true. The Soviet Navy has a mission to destroy Western SSBNs during the conventional

phase of a war, and it expects similar efforts against its own SSBNs. Nuclear war is not likely to be initiated from the sea in response to the loss of a SSBN unless the war has turned nuclear on land. [Ref. 42: p. 87]

Development of forces to counter the ASW power of the U.S. Navy and its allies is a continuing and highly emphasized program. [Ref. 43 : p. 15] This mission is gaining priority in the Soviet hierarchy of missions, evidenced by increased research and development in ASW-related and space programs. Strategic ASW may belong higher up in the order of mission priorities.

Sea lines of communications or SLOC interdiction is a mission that attempts to interrupt merchant and military shipping lanes used for the reinforcement and resupply of Imperialist nations during a major, prolonged war. The priority of this mission depends on the circumstances; more specifically, the nature and length of the conflict. A sustained, conventional war would precipitate an anti-SLOC mission with the hopes, for example, of inhibiting shipping across the Atlantic and weakening NATO's support from North America. On the other hand, a nuclear war of short duration might place SLOC interdiction lower on the priority list. [Ref. 43 : p. 16]

The main Soviet weapon in SLOC interdiction is the submarine. "Moreover, there are strong indications that the Soviet Navy believes that attack on the West's ports would be at least as cost effective as attack on shipping still at sea." Other alternatives are the mining of enemy port and harbor approaches and the use of land-based missile-carrying aircraft. [Ref. 41 : pp. 187-188]

Naval combat support of ground forces involves conducting amphbious landings of operational and tactical scale to support Warsaw Pact ground force in both offensive and defensive operations, countering enemy amphibious landing operations, and providing direct missile, gunfire, and air support for ground forces operating in coastal sectors. Other naval objectives include the seizure of strategically important islands, naval bases, ports and straits. Possible naval support of land operations could take place in the Baltic and Black Seas. Not only could ground forces advancing westward be supported, but also the Danish and Turkish Straits could be controlled, closing off the Baltic and Black Seas to Western intervention. Seizure of the Danish Strait could lead to the Soviet Baltic Sea Fleet reaching the North Sea and the waters beyond. [Ref. 41 : p. 179]

E. SUBMARINES

The submarine force of the Soviet Union is the most significant strength of the Soviet Navy and is the largest submarine force in the world. The submarine's principal missions are comprised of :

- executing a land-attack mission,
- denying hostile surface and submarine forces access to Soviet waters, and
- conducting reconnaissance and strike missions against surface shipping on the high seas. [Ref. 44 : p. 1]

To execute these missions, the Soviets have created a force that numbers over 360 active submarines. Almost half of this force is nuclear powered. See Figure 6 on page 47 for a list of Soviet submarine strengths as of January 1987. [Ref. 45 : p. 1383]

Currently, the Soviets are involved in an intensive submarine development program. Nine classes of submarines are either being built or tested, representing a new generation of submarines that place emphasis on quieting, speed, nuclear propulsion, and weapon versatility. [Ref. 33 : p. 82]

In general, Soviet submarines are apt to be faster, dive deeper, and carry more weapons than U.S. subs. However, their noise levels and sonar equipment have, in the past, been considered as inferior. Today, Soviet technological improvements are making it ever harder for U.S. ASW forces to find Soviet submarines. The Soviets have been constructing submarines with a double hull design. The double hull improves drag and noise characteristics. The design consists of an outer protective hull and an inner, stronger pressure hull. Buoyancy tanks and equipment are placed between the hulls. [Ref. 36 : p. 111] This double hull design would probably enable a submarine to absorb minor damage to the outer hull from a relatively small warhead, such as a U.S. Navy Mark 46 torpedo, and still continue to operate. [Ref. 44 : p. 9]

Anechoic coating is another method used by the Soviets to improve submarine quieting. Echo absorbing, rubber-like material covers the hull to reduce active sonar transmissions of hull noise. However, anechoic coatings may interfere with incoming passive signals that Soviet sonar operators listen for, thus possibly decreasing the submarine's sonar detection range. [Ref. 46: p. 763]

Four new classes of nuclear-attack submarines have been introduced since 1983; the Mike, Sierra, Yankee, and Akula. The Mike SSN is reported to be much quieter than previous Soviet attack submarines and carries more weapons. The titanium hull allows the Mike greater diving depths. It is capable of firing a variety of submarine-launched

Submarines	Baltic	Northern Fleet	Black Sea	Caspian Sea	Pacific Fleet	Total
Ballistic Missile	6	39	-	-	32	77
	-	(38)	-	-	(25)	(63)
Guided Missile	3	32	2	-	26	63
	-	(25)	-	-	(23)	(48)
Long-range attack	12	85	5	-	38	140
	-	(50)	-	-	(22)	(72)
Medium-range attack	18	2	24	-	22	66
Special Purpose	2	5	4	-	5	16
TOTAL	41	163	35	-	123	362
		(113)			(70)	(183)

Note: Numbers in brackets indicate nuclear powered submarines.
About 100 submarines in reserve have not been included.

Figure 6. Strength of Soviet Submarine Force (January 1987)

weapons, including ASW weapons such as SS-N-15 nuclear depth bombs and SS-N-16s with conventional homing torpedo warheads. [Ref. 33 : p. 82] The Mike SSN has been identified as a possible candidate for SS-N-21 land-attack cruise missiles. The SS-N-21 is similar to the U.S. Tomahawk missile. Range is estimated to be 1600 nautical miles. Possible missions for the Mike SSN would probably take place in the North Atlantic or off the east coast of the United States. These missions could include launching its

SS-N-21 missiles at land targets such as naval installations and strategic bomber bases, and intercepting U.S. naval units deploying from their home ports. [Ref. 44 : pp. 14-15]

The Sierra SSN is thought to be the successor to the Victor III SSN class. It is quieter, has an improved sonar, a higher speed, and a greater operating depth due to a possible titanium hull. It is also assumed by Western analysts that the Sierra is outfitted to carry SS-N-21 missiles [Ref. 36 : p. 141], as well as SS-N-15 and SS-N-16 missiles, and wire-guided torpedoes. The Sierra will deploy with the Northern and Pacific fleet "...and will conduct a hunter-killer mission in support of Soviet ballistic missiles and cruise missile submarines." [Ref. 44 : p. 17]

The Yankee SSN is a converted Yankee SSBN; the ballistic missile tubes were removed and associated fire control equipment either completely or partially dismantled. One Yankee SSN was fully operational by the end of 1985. Other Yankee SSBNs are reported to be in the process of conversion to attack submarines. There are also possible plans for converted Yankee nuclear-powered cruise missile-equipped submarines. They could be candidates for carrying a second variant of the Soviet land-attack cruise missile, the SS-NX-24, which would be larger than the SS-N-21. The SS-NX-24 has a supersonic speed, estimated to be about Mach 2. The range of this missile permits a variety of targets such as ports, industrial targets, airfields, and command and control centers. [Ref. 44 : p. 16]

The first of the Akula class SSN was launched in 1984 and is similar to the Victor III and Sierra SSNs. It is believed to have a titanium hull as well as advanced quieting techniques. The Akula SSN carries SS-N-16 ASW missiles and is a probable candidate for the SS-N-21 land-attack cruise missiles. [Ref. 36 : p. 139]

Soviet determination to continue the development of SSBNs and torpedo tube-launched SLCM deployment is emphasized by the Typhoon, Delta and Oscar class submarines. The largest undersea craft ever built (25,000 tons submerged), the Typhoon is the first Soviet SSBN to combine long-range capabilities with a multiple warhead payload. The Typhoon class carries 20 SS-N-20 Sturgeon missiles (MIRV) that have a range of 4500 nautical miles. This missile is presumed to be the most accurate SLBM in the Soviet arsenal. Thus, the Typhoon can fire the missiles from secure distances. The sail design of the Typhoon indicates an ice-penetrating capability and it is presumed that the submarine will be employed for extended patrols underneath the Arctic ice cap. [Ref. 44 : p. 10] It would surface through the ice to fire its missiles. [Ref. 36 : p. 114] The Delta IV class submarines, which are assigned to the Northern fleet, are also con-

figured for under-ice operations. It carries 16 SS-N-23 SLBMs specifically developed for the Delta IV. The SS-N-23 is a ten MIRV missile with a 4500 nautical mile range. [Ref. 47: p. 24] The Oscar class nuclear-powered cruise missile submarine is equipped with 24 SS-N-19 antiship cruise missiles that are submerged-launched from vertical launch tubes and have a maximum range estimated at 250-300 nautical miles. These missiles will probably be targeted against NATO carrier battle groups. [Ref. 33 : p. 55]

Close to half of the Soviet submarine force is driven by diesel electric engines. The diesel engines are used when the sub is moving on the surface. When submerged, diesel boats switch over to battery-powered electric motors that allow the submarine to remain underwater for up to 150 hours. Diesel-electric boats have their advantages over nuclear-powered boats; they cost less to build, they do not require a highly trained nuclear engineering crew, they are very quiet, and they can become totally silent by turning off their battery. [Ref. 41 : p. 262] When diesel boats are operating on their batteries, they are difficult to detect and can be particularly effective in confined waters, choke points and in coastal defense missions. [Ref. 43 : p. 29] The Soviet Navy continues its diesel-powered program with the production of the Kilo class attack submarine. This SS is expected to conduct shallow water operations in the seas adjacent to the Soviet Union.

F. SOVIET NAVAL AVIATION

Soviet Naval Aviation (SNA) is comprised of some 55,000 men and 1,650 aircraft directly subordinate to the Soviet Navy and divided between the four fleet areas. Figure 7 on page 50 gives the strength of the SNA as of early 1987. [Ref. 36 : p. 55]

Antiship strike and patrol/ASW aircraft are apportioned to each fleet. Long-range ASW and Bear reconnaissance aircraft are employed in the Northern and Pacific fleets only. Backfire strike aircraft are deployed to the Baltic, Black Sea, and Pacific fleets. The land-based SU-17 Fitter-C ground attack regiments are assigned to the Baltic and Pacific fleets and are probably intended to support amphibious landings and attack small, high speed naval craft. The Kiev class aircraft carriers assigned to the Northern, Black Sea, and Pacific fleets employ Yak-38 Forger VSTOL aircraft and Hormone and Helix helicopters.

SNA is primarily a land-based force. It is supplemented by aircraft from the state's other air forces; in particular, bombers from Long-Range Aviation, which is the strategic air arm of the Soviet Air Forces. Bombers assigned to Long-Range Aivation include Backfire, Bear, and Bison long-range aircraft; medium-range Badger and Blinder aircraft;

TYPE	AIRCRAFT
Strike/Bomber Aircraft	(400)
Backfire-B/C	125
Badger-C/G	240
Blinder-A	35
Fighter/Fighter-Bomber Aircraft	(135)
Fitter-C	75
Forger-A/B	60
Electronic/Reconnaissance Aircraft	(135)
Badger-D/E/F/H/J	80
Bear-D	45
Blinder-C	few
Aerial Tankers	75
Badger-A	
Anti-submarine Aircraft	(205)
Bear-F	60
Mail	95
May	50
Helicopters	(335)
Haze-A/B	105
Helix-A	50
Hormone-A	120
Hormone-B	60
Hip	few
Transport Training	400
TOTAL	1,650

Note: Totals are rounded

Figure 7. Strength of Soviet Naval Aviation (1987)

and shorter-range Fencer attack aircraft. All aircraft are capable of carrying both nuclear and conventional weapons. [Ref. 36 : p. 63] The SNA land-based force is bolstered by organic naval air power such as Vertical/Short Take-Off and Landing (VSTOL) aircraft and helicopters onboard ships. [Ref. 41 : p. 114]

The SNA has three principal missions: reconnaissance and maritime surveillance, antiship strike, and antisubmarine warfare. About 180 aircraft, including TU-16 Badgers, TU-95 Bear Ds, TU-22 Blinders and shorter-range aircraft for coastal patrols, are used for reconnaissance and maritime surveillance. The Badger is a turbojet-powered medium bomber that serves a variety of missions such as photographic and electronic reconnaissance, and electronic countermeasures (ECM). Range is 4,000 miles. Combat radius is 1,920 miles. The Bear D has four turboprop engines turning contra-rotating propellers and is equipped for in-flight refueling. Its unrefueled maximum range is 9,000 miles. The Blinder is a supersonic bomber with an estimated range of 4,000 miles at subsonic speed.

The antiship strike role was originally developed in the 1950s to counter the threat of American aircraft carriers. It is handled by about 350 aircraft comprised of BadgerC/G aircraft equipped with air-to-surface missiles and TU-22M Backfire bombers. The Backfires pose a serious threat; they are long-range (unrefueled range approx. 2,500 miles), high performance bombers that can be used to deploy against surface warships as well as merchant and logistic shipping. [Ref. 41 : pp. 115-116] The Backfire is replacing the older Badger as the Soviet Navy's main antiship strike aircraft. [Ref. 48 : p. 35]

Submarine hunting is conducted by over 400 aircraft; the primary aircraft are the IL-38 May, the TU -95 Bear F, the BE-12 Mail flying boat, Hormone A and Helix helicopters and VSTOL aircraft onboard ships. The IL-38 May resembles the U.S P-3 Orion patrol aircraft in appearance and missions. The turboprop Bear F has sophisticated sensors that enable the Soviets to improve their ASW searches in the areas of range and quality. It can attack with a large payload of homing torpedoes and depth bombs. The ship-based Helix helicopter is the successor to the KA-25 Hormone and has a greater range, speed, and weapon payload. [Ref. 33 : p. 88] Maximum endurance is four and a half hours.

G. MAIN SURFACE COMBATANTS

Since the mid-1960s, the Soviet Navy has demonstrated a strong commitment to larger warships with heavier firepower and greater electronics capabilities. These ships

can deploy to farther distances, carry more ordnance, and execute a more considerable range of missions and operations than their predecessors. [Ref. 33 : p. 85] At-sea time of Soviet ships is not comparable to U.S. Navy deployments; about 15 per cent of the Soviet Navy's ships are deployed at any given time. Yet, it should be stressed that the Soviets believe in maintaining a high inport readiness condition with the ability to deploy large numbers of ships during a crisis or conflict. [Ref. 36 : p. 2] Figure 8 on page 53 depicts the Soviet surface combatant forces as of January 1987. [Ref. 45 : p. 1383]

The first Soviet nuclear carrier, approximately 70,000 tons and 1,000 feet long, was launched in December 1985. The carrier is expected to commence sea trials in 1988-1989, and should be operational by 1990-1991. The building schedule could produce three such carriers by the late 1990s. [Ref. 36 : p. 164]

The final flight-deck configuration is not yet confirmed; "ski-ramps" may be used initally for VSTOL or CTOL aircraft. Catapults are expected to be fitted at a later date. The aircraft for the air wing is still being developed. It is estimated that 60-75 fixed-wing aircraft will be based on the carrier and all will be stowed in hangars. The Saki naval airfield near the Black Sea provides an active test and evaluation program with a flight deck mock-up. The SU-27 Flanker and the MIG-29 Fulcrum, air-intercept fighters assigned to the Soviet Air Forces, have been associated with the test facility. It will take a number of years for the aircraft carrier and the eventual airwing to reach a level of operational effectiveness. When that level is reached, the Soviet Navy will be able to extend more dynamic operations beyond the coverage of land-based aviation. [Ref. 33 : p. 86]

The largest combatant ship currently operational in the Soviet Navy is the Kiev class aircraft carrier, of which there are four units. The Kiev enhances the Navy's ability to conduct ASW, reconnaissance, surface strike and air defense missions by employing 12-13 Forger VSTOL aircraft and 14-17 Hormone and Helix helicopters. [Ref. 43 : p. 27] Yak-38 Forgers, vertical takeoff fighters, certainly do not pose a formidable threat as an airwing component of the carrier. Fuel consumption during takeoff and landing allows the Forger approximately 16 minutes of flying time. [Ref. 41 : p. 251] This "all-purpose" carrier also carries an extensive missile arsenal which includes SS-N-12 Sandbox antiship cruise missiles with a 300 nautical mile range. [Ref. 41 : p. 105]

In the early 1980s, the USSR began its series production of their most technologically advanced classes of surface combatants; the Kirov guided-missile cruiser, the Sovremennyy and Udaloy guided-missile destroyers, and the Slava guided-missile cruiser.

Surface Warships	Baltic	Northern Fleet	Black Sea	Caspian Sea	Pacific	Total
Aircraft carriers	-	1	1	-	2	4
Helicopter carriers	-	-	2	-	-	2
Guided missile cruisers	2	9	6	-	12	29
Cruisers	2	2	2	-	3	9
Guided missile destroyers	10	17	12	-	9	48
Guided missile frigates	6	8	7	-	11	32
Guided missile corvettes	13	10	10	-	13	46
Guided missile fast patrol boats	32	12	20	4	34	102
Destroyers	4	2	7	-	20	
Frigates	24	41	41	4	44	154
Corvettes	32	30	15	4	59	140
Anti-sub vessels	71	-	38	16	43	168
Torpedo fast patrol boats	7	-	-	3	-	10
TOTAL	203	132	161	31	237	764

Figure 8. Strength of Soviet Surface Combatant Forces (January 1987)

The Kirov is the first nuclear surface warship built by the Soviet Union and is the largest warship in the Soviet Navy, with the exception of aircraft and helicopter carriers. The Kirov is a multi-purpose cruiser that can handle submarine, surface and air attacks. The cruiser can also accompany carriers to supplement their antiair, antisurface, and antisubmarine capabilities. [Ref. 44 : p. 41] It is equipped with 20 supersonic SS-N-19

antiship cruise missiles, three helicopters (either Hormone or Helix) for ASW and for over-the-horizon-targeting of SS-N-19 missiles, SS-N-14 ASW missiles (rocket-propelled homing torpedo warhead with an effective range of four nautical miles), and air defense weapons with anti-cruise missile capabilities that include short-range SA-N-9 missiles used as defense against incoming missiles, and the longer-range SA-N-6 missiles. [Ref. 33 : p. 86]

The Sovremennyy guided-missile destroyer is a specialized surface combatant, designed primarily for antisurface warfare. It also has a significant arsenal of antiair capabilities, but minimal ASW armament. The Sovremennyy carries eight SS-N-22 60 nautical mile range antiship cruise missiles and two twin 130mm gunmounts, the largest guns installed on Soviet destroyers. The Sovremennyy also employs a Helix or Hormone helicopter and 40 short-range surface-to-air SA-N-7 missiles that can engage targets up to 46,000 feet. [Ref. 36 : p. 200] The Udaloy guided-missile destroyer is also a specialized surface combatant but its role is antisubmarine warfare. Its main armament consists of ASW SS-N-14 missiles and the capability to embark two Helix helicopters. The Udaloy also carries SA-N-9 missiles for air defense. [Ref. 43 : p. 27]

The gas-turbine powered Slava guided-missile cruiser is configured primarily for an antiship function. It is armed with SS-N-12 long-range supersonic cruise missiles that have a range of 300 nautical miles, the SA-N-6 SAM system and a variety of self-defense weapons such as two 130mm gun batteries. [Ref. 43 : p. 27]

H. AMPHIBIOUS FORCES

The amphibious forces of the Soviet Union consist of two Ivan Rogov class landing platform dock (LPD) ships, 33 tank landing ships (LST), 55 medium landing ships (LSM), 71 air cushion landing craft, about 100 conventional landing craft, and a Soviet Naval Infantry of 16,000 strong amphibious assault forces (marines) equipped with tanks, armored personnel carriers and rocket launchers. Development of these forces are to provide the capability for local amphibious operations in support of ground forces and possible seizure of islands, naval bases, ports and straits. [Ref. 41 : p. 118]

The two Ivan Rogov class LPDs are the largest amphibious ships built by the Soviet Navy. Each ship is capable of embarking an entire Naval Infantry battalion (about 400 personnel) and its vehicles and equipment, including ten light or medium tanks and 30 armored presonnel carriers. The LPD has two landing decks (forward and aft of the superstructure) and the helicopter hangar can accommodate four Hormone C variants. The floating dock well can hold three air cushion landing craft. Armament includes four

Gatling guns, a barrage rocket launcher, and 20 SA-N-4 surface-to-air missiles with an eight nautical mile range for point defense. [Ref. 36 : pp. 258-259]

The Soviet Navy has designed and built about 70 air cushion vehicles of varying sizes, speeds, and capacities to be utilized as landing craft. The Aist class, the largest air cushion vehicles in the world, can travel 350 nautical miles at 45 knots while carrying as many as 150 troops, or instead of troops, two heavy tanks or four light tanks. They can accommodate easy movement from sea to land or vice versa, and have been reported able to continue operating in wave heights of ten to 12 feet. These craft, however, can not be transported by Ivan Rogov class LPDs. [Ref. 44 : p. 79]

The main task of the Soviet Naval Infantry (SNI) is to act as an initial assault force, to be followed by later-arriving Army divisions. Other missions include holding captured beachheads against counterattack, river crossings, and defense of naval bases. [Ref. 43 : p. 50] The Northern, Black Sea, and Baltic Fleets are each assigned an SNI regiment consisting of three infantry and one tank battalions. The Pacific Fleet has two regiments assigned to it. [Ref. 44 : p. 80] Amphibious lift of the SNI is primarily provided by the two Ivan Rogov class LPDs. Once infantry troops have landed on a hostile coast, they must be rapidly resupplied and reinforced on a continuous basis. Air cover and effective naval gunfire support may be required to land and supply troops. Until the Soviet Navy has a substantial force of carriers with suitable aircraft embarked, air cover and support can only be offerred within range of their own air bases. [Ref. 44 : p. 81]

I. NAVAL MINE WARFARE FORCES

Western attention on the Soviet Navy usually focuses on submarines and missiles. However, it is important to note that the Soviet Navy claims the largest mine warfare forces in the world. They possess an extemely large stockpile of mines, great minelaying capabilities, and a mine countermeasures ability that is incomparable to any other nation. Most of the mine warfare fleet is composed of coastal vessels and craft. The Soviet Navy places great emphasis on the functions of offensive mine warfare; closing of enemy ports and harbors, blocking of shipping lanes, isolation of naval operationg areas, and denial of choke point transit routes or operating areas to enemy missile submarines. [Ref. 33 : p. 88]

Soviet mine stockpiles include roughly 100,000 moored contact mines and at least 200,000 magnetic and acoustic magnet induction mines. The Soviets only have three dedicated minelayers; the 3,500 ton Alesha class. However, several surface combatants,

bombers and maritime patrol craft, and essentially all combat submarines can lay mines and practice to do so regularly. [Ref. 33 : p. 88]

Mine countermeasure vessels and craft (mine hunters and minesweepers) number over 300. There are three types of operations: mine reconnaissance and search, minesweeping, and mine hunting. Special sonar and radar dectection gear, explosive devices, and mechanical and remote sweeping apparatus are standard equipment for search and minesweeping. Mine hunters employ mine hunting sonar and special diving teams that defuze and recover, if possible, swept mines. All mine countermeasures vessels have a secondary minelaying mision. [Ref. 44 : p. 108] Figure 9 on page 57 shows the strength of Soviet mine vessels. [Ref. 45 : p. 1383]

J. FUTURE TRENDS

Until 1955, Soviet naval power reached only to the coastal regions of the country. Since then, fleet size, composition, effectiveness and military naval objectives have extended Soviet naval operations well out to sea to accomplish its broad range of tactical and strategic missions. Numbers alone relect a significant capability to project sea power. In its pursuit of executing its primary mission of defending the USSR, the Soviet Navy will probably continue extending its theater borders. This can be achieved by acquiring more overseas bases to operate additional permanent forward naval forces. Regions of strategic importance would be the Mediterranean, the Arabian Seas, and the South Pacific. [Ref. 38 : p. 34] The Soviets have already established strategic overseas bases at Cam Ranh Bay, Syria, Ethiopia and Cuba. At a time when many American overseas bases are existing on shaky terms, expansion of Soviet overseas bases could have serious implications. However, reasons for "anti-American base" sentiment in foreign countries may also deny the Soviets a chance to institute new bases.

Long-range, terrain following, sea-launched cruise missiles (SLCM) have quickly attained dangerous significance in naval warfare. Cruise missiles give the Soviet Navy another important mission; fleet against shore. All naval attacks using SLCM will contribute to the outcome of a war on land. This fact becomes crucial to continued naval developments when taken into consideration with a society that has identified its security interests with events and occurrences on the Eurasian continent and not with the oceans. [Ref. 49 : p. 106] The potential power of this weapon in accuracy, firing range, and agility will not cause the USSR's maritime frontiers to recede; rather they will expand, particularly in polar regions. [Ref. 38 : p. 34]

Mine/Counter Mine Ships	Baltic	Northern Fleet	Black Sea	Caspian Sea	Pacific	Total
Major landing ships	-	-	-	-	2	2
Landing ships (medium)	19	13	12	14	19	77
Landing ships (small)	30	6	19	12	30	97
TOTAL	49	19	31	26	51	176

Figure 9. Strength of Soviet Mine Warfare Force (January 1987)

It can be expected that the Soviet Navy will continue allocation of resources to ballistic missile submarines and ASW platforms to protect the SSBNs. The Soviets will strive for progress in the areas of greater speed, quietness, and sensoring devices that are quality comparable or better than U.S. submarines. [Ref. 40 : p. 97] Surface combatants, however, represent the fragile link of Soviet ship construction. Military focus is on strategic submarines and the land battle. The Navy is not the primary projection force; Soviet land-oriented leadership acknowledges naval contributions to force projection in a multi-service role. The Navy will continue with resources for construction of power projection combatants. Yet, if non-naval defensive interests increase, surface combatant shipbuilding will falter in deference to those interests. [Ref. 44 : p. 128] Those interests could be the present Soviet economy. The Politburo is trying to revitailize an ailing economy which may require substantial capital investment increases for basic industries. Military expenditures could be severely affected. [Ref. 49 : p. 109]

K. CHAPTER SUMMARY

The Soviet naval forces described in this chapter represent a multitude of capabilities that pose a viable and formidable threat to the Blue force commander. Regarding total numbers of ships, submarines, and aircraft, the Soviet Union has far more hardware than the U.S. However, the greater number of forces does not necessarily decide the outcome of the battle. Tactics, weapons and communications technology, and command play a major role in combat. Besides, in a major naval conflict, it is highly probable that the Soviet Union will be facing forces from the United States and its allies, thus "reducing" the threatening size of Soviet fleets.

The Blue force naval commander must worry more about Soviet attack, ballistic, and cruise-missile submarines. Total Soviet submarines outnumber U.S. submarines almost three to one. The Soviets may have lagged behind in submarine quieting technology in the past. However, the Soviets are reportedly producing quieter subs that may give the U.S ASW forces a more perplexing and difficult hunter mission. Soviet improvements in hull design and faster speeds coupled with the fact that the Soviets have over 280 attack and cruise-missile submarines divided between the fleets, could make the Soviet anti-ship mission fatal to the enemy carrier battle group. Under-ice operations have become a significant Soviet tactic. Deployment of the SS-N-21 land attack cruise missile and the reconfiguration of submarines to hold the SS-N-24 cruise missile demonstrates the Soviet Navy's determination to keep the strength and capabilities of their submarines "on the cutting edge".

Soviet Naval Aviation is the second most important component of the Soviet Navy. Primarily a land-based force, its strength lies in strike/bomber aircraft. Significance has been placed on overseas naval operations and is reflected in the installation of overseas bases and the possible development of a naval air wing that will not need land support for nuclear powered carrier operations.

The Blue commander and his forces should be familiar with Soviet hardware and capabilities. To be as effective as possible in combat, one must be aware of the enemy's forces, the weapon threat, and how those forces and weapons can be used against one's own naval C3 structure. This knowledge will be used in the Blue commander's decision making process as he determines the viable courses of action that are available to him to execute his mission. As stated previously, tactics also plays a major role in the outcome of battle. The Blue force commander must ensure that his battle force can apply the most effective tactics to a situation of conflict. To achieve this goal, his battle force

must practice tactics against Soviet submarines, surface vessels and aircraft. Unfortunately, this strategy is not always feasible or wise. Thus, the Blue force commander must involve his forces and staff in underway naval tactical exercises as well as use of automated wargames and trainers. Automated wargames and trainers allow the Blue force commander and his staff to exercise making tactical decisions against enemy force capabilities during conflict scenarios. The number of different scenarios are limited by past combat experiences, human imagination, and system parameters. This decision-making tool can not provide every battle scenario possible; it does not prepare one for exceptions and anomalies in battle. Yet, wargames and trainers familiarize the Blue force commander with Soviet hardware capabilities, effectiveness, and drawbacks, as well as making him aware of own force strengths and weaknesses. It also allows him to learn from his mistakes, which may not be possible in war.

V. RED NAVAL C3 SYSTEM

A. INTRODUCTION

The Soviet Red naval C3 system is integrated into the large and powerful Soviet fleet. Soviet naval C3 is based on requirements of survivability, reliability, diversity, redundancy and effectiveness. [Ref. 32 : p. 17] To meet these requirements, Soviet C3 has become highly automated. The automation has been designed specifically to meet military requirments, making it much more effective than reconfiguring existing systems for military use. [Ref. 29 : p. 728]

A C3 system consists of command posts or control organs, forces and weapons, sensors that collect intelligence, and an interconnecting communication network. The C3 system is limited by the level of technology available to the system designer. Technology can increase the capabilities of sensor and weapon systems, as well as communications and computers. [Ref. 50 : p. 112]

Soviet command posts, communications, and intelligence methods will be examined in the following sections. Major forces and their weapons have been discussed in Chapter Four and will not be analyzed below. Conclusions to the chapter will attempt to summarize how the Blue force commander can use this knowledge to more effectively use his own C3 naval system.

B. COMMAND POSTS

The establishment of the principle or main naval command post and separately located subordinate, alternate, and reserve command posts, as well as varied communications resources connecting the command posts with other nodes in the C3 system, provides the redundancy of the Soviet naval C3 system. System survivability is increased through redundancy and hardening and concealment of the command posts. The main command post of the Soviet Red naval C3 system is thought to be near Moscow. [Ref. 29 : p. 728]

A flagman command post (FKP) and a fleet or flotilla command post (KPF) control naval surface forces. The KPF is a specially equipped and hardened headquarters on shore where the commander and the staff of the fleet or flotilla direct subordinate forces in an operation or exercise at sea. The operational control of Soviet afloat submarines belongs to the respective command post ashore. However, unlike the case of surface forces, tactical command and control decisions are made by the on-scene senior subma-

rine tactical group commander. (Soviet submarines usually travel in pairs or groups of two or more subs of the same or varied class carrying out a specific mission.) [Ref. 51 : p. 69]

Command posts receive reconnaissance data from various sources ashore, at sea and in the air regarding a target's location, composition and movement and transmits this information to the force commander or senior commander of the tactical group at sea. The command post is also responsible for selecting the engagement or strike time and location and vectoring the tactical group so they can gain initial target contact with their own sensor devices. [Ref. 51 : p. 70] Thus, the command post is designed to provide the fleet commander situated at the post with near real-time intelligence data and communications and the ability to coordinate and interoperate different forces and their weapon systems from one central point.

In an American battlegroup, the carrier represents relative independence of operations; the Officer in Tactical Command or OTC runs the command and cotrol problem. For the Soviets, the OTC is not at sea; he is located at a land-based command post relying on national sensor systems for surveillance information. The Soviet Navy's first nuclear carrier will enable them to form a battlegroup that can sustain air defense or airborne ASW operations for an extended period of time, without the aid of land-based aircraft or land-based facilities. Perhaps, an independent battle group can have some type of effect on the strong, centralized control of Soviet naval operations so that intense carrier combat decisions can be made by the senior seagoing officer, and not made thousands of miles away in a bunker. [Ref. 44 : pp. 22-26] Yet, centralization is so embedded in the Soviet political, military, and economic arenas that initiative of a carrier commander will probably be limited, if allowed, and the continuous series of decisions that must be made for successful carrier operations will be made from the land-based command post.

C. COMMUNICATIONS

Fast, reliable and secure communications is the most significant element of a naval C3 system. Without an interconnecting communications network, the commander will not be able to transmit actions to his subordinate forces in an efficient and expeditious manner. The Soviet Navy uses a comprehensive network of cable and open-wire lines and radio relay links to provide communications between the main and secondary naval command posts ashore. An extensive, redundant communications system also exists

between naval command posts ashore and forces afloat, which include submarines, surface ships and aircraft at sea. [Ref. 51 : p. 65]

The principal means of communication between shore naval command posts and submarines deployed in forward areas are low frequency (LF) and very low frequency (VLF) communications. The Soviets operate over 30 VLF land-based stations. The maximum range of VLF transmissions is approximately 10,000 miles. VLF wave depth penetration is about 18 feet which means the submarine can stay submerged when receiving messages. Data rate is probably about 67 words per minute. The early 1980s demonstated Soviet use of extremely low frequency (ELF) communications to broadcast to their SSBNs and SSGNs. [Ref. 51 : p. 65] The range of ELF wave transmissions is about 6200 miles and can penetrate thick ice with minimal degradation, and water up to 360 feet. The submarine uses a towed antenna to receive the signal. However, ELF is only capable of an extremely slow data rate; three characters takes about 15 minutes, allowing only very short coded messages to be transmitted. ELF communications are probably used by the Soviets to notify SSBNs to rise to shallower depths to receive VLF or LF bands. [Ref. 51 : p. 72] The wavelengths of these frequency band ranges (LF, VLF, and ELF) emphasize the Soviet Navy's intention to maximize the message's reception depth vice message data rate. [Ref. 29 : p. 728]

High frequency (HF) radio transmitters are the primary means of communications between shore command posts and Soviet surface ships and aircraft. HF is also used as a backup capability for LF, VLF communications with Soviet submerged submarines. Soviet HF radio transmitters necessitate that long antennas be exposed above the surface of the water. Soviet submarines can also use buoys equipped with telescopic antennas that transmit in the HF band for emergency communications with surface forces, aircraft and shore command posts. [Ref. 51 : p. 71] There does not seem to be a Soviet airborne radio communications system equivalent to the U.S. Take Charge and Move Out (TACAMO) for communications with submarines. [Ref. 51: p. 65]

The Soviets use radio communications to transmit and receive telephone and telegraph data, and also to transmit data to automated systems. "Radio direction" and "radio net" are the basic methods of communication organization. Radio direction is a highly reliable and secure method of arranging radio communications between two command posts. Radio net organizes radio communications between three or more ashore or afloat command posts. These communications will be less reliable and secure, and have a lower circuit availability. [Ref. 51 : p. 70]

Military communications in space are used by the Soviet Navy for long-distance transmission of messages. Wartime roles for communications satellites could include relaying messages concerning nuclear weapons, the relaying of targeting data to weapons platforms and the command and control of military operations. [Ref. 52 : p. 107]

The Molniya series of satellites, first launched in the mid-1960s, provides eight hours of continuous contact with the Soviet mainland. [Ref. 51 : p. 72] The Molniya communications satellite system can be used to relay messages to submerged submarines. The Soviets also have satellites in orbit that primarily transmit data between satellites--namely the Cosmos 1700 series. [Ref. 29 : p. 728]

The Statsionar (Raduga) communications satellite system has been operating since the mid-1970s. Two Statsionar satellites are placed in a geosynchronous position and are each able to complete one orbit every 24 hours. Three geostationary satellite communications systems are also under development by the Soviets. They are called the Volna, Gals and Luch series. [Ref. 51 : p. 72] The Volna series has satellites placed over the Atlantic, Pacific and Indian Oceans and reportedly has the ability for real-time message relay. [Ref. 29 : p. 729]

The Soviet satellite navigational systems provide accurate position locations for Soviet submarines, surface combatants and aircraft. They are usually kept in a high orbit of about 20,000 km to ensure wide coverage. The current navigational system consists of 12 satellites placed in orbital plans that provide continuous and redundant coverage of the entire world. A new and improved global satellite system known as GLONASS is composed of nine to 12 satellites and is reportedly similar to the U.S. NAVSTAR global positioning system. Some evidence indicates that GLONASS feeds off signals from NAVSTAR. [Ref. 52 : p. 109]

The Alpha radio navaid system is very similar to the U.S. Omega radio navigation system. The Alpha has three powerful 500kW transmitters located in the eastern, western, and geographic center of the USSR that have the capability to provide world-wide coverage. The Alpha is used primarily by aircraft and can conceivably be used by submerged Soviet submarines, in particular, SSBNs deployed in the northern waters of the world. [Ref. 29 : p. 729]

D. INTELLIGENCE

Intelligence provides the information necessary to utilize combat-ready forces in the most effective manner in fulfilling the objectives of a mission. Good intelligence requires the highest technological level of operational capability, reliability, clarity and secrecy.

Soviet strategic intelligence is defined as activities conducted by state agencies which are directed towards systematic collection in both peacetime and wartime of political, military, economic, scientific and technological data concerning perceived enemies. [Ref. 29 : p. 729]

There are three state agencies that collect intelligence for naval requirements: the Naval Intelligence organization, the KGB (Committee of State Security), and the GRU (Chief Directorate of the Intelligence of the Soviet General Staff). The Naval Intelligence organization is comprised of an intelligence directorate of the Main Naval Staff in Moscow and intelligence directorates for each fleet. Fleet directorates support operating forces in the fleet area, operate various reconnaissance and collection platforms, and apprise the Main Naval Staff and the GRU of the results of their intelligence gathering. A fleet intelligence directorate is described by Figure 10 on page 65.

The Naval Intelligence organization uses several diverse types of sensoring devices to collect, analyze and evaluate naval intelligence. These sensors include ocean surveillance satellites, maritime reconnaissance aircraft, submarine and surface combatants, specialized intelligence collector ships, merchant ships and fishing trawlers, coastal radar stations, and seabed acoustic surveillance systems. Together, these sensoring devices are known as the Soviet Ocean Surveillance System (SOSS)--a term created by Western analysts. SOSS is the principal means of tracking both Soviet and foreign naval forces. [Ref. 29 : p. 37] Principal naval intelligence targets for the Soviet Union are the enemy's ASW forces (especially SSNs), its SSBN/SLBM force, aircraft carrier task forces, major surface combatants, amphibious forces, naval auxiliaries and merchant shipping, and logistical support systems (including the respective C3 systems of these forces) [Ref. 29 : p. 729] These targets are listed by priority.

Ocean surveillance satellites are controlled by the Soviet Air Defense Forces. The Soviets first began testing and launching these satellites in the mid-1960s. These satellites are used to monitor enemy fleet movement so they can be targeted by various anti-ship weapons. [Ref. 52 : p. 109]

The Soviet Union uses both active and passive ocean surveillance satellites. Active ocean surveillance satellites, called RORSAT (Radar Ocean Reconnaissance Satellite) by the West, use active radar to detect ships. The are usually launched in pairs to enhance coverage. They travel a 155-175 mile altitude circular orbit at an inclination of 65 degrees. The paired satellites track surface vessels and are thought to provide a stereo-imaging effect that enhances the analysis of distinguishing specific ships sighted. However, it is believed that the satellite's high resolution can not determine ship type.

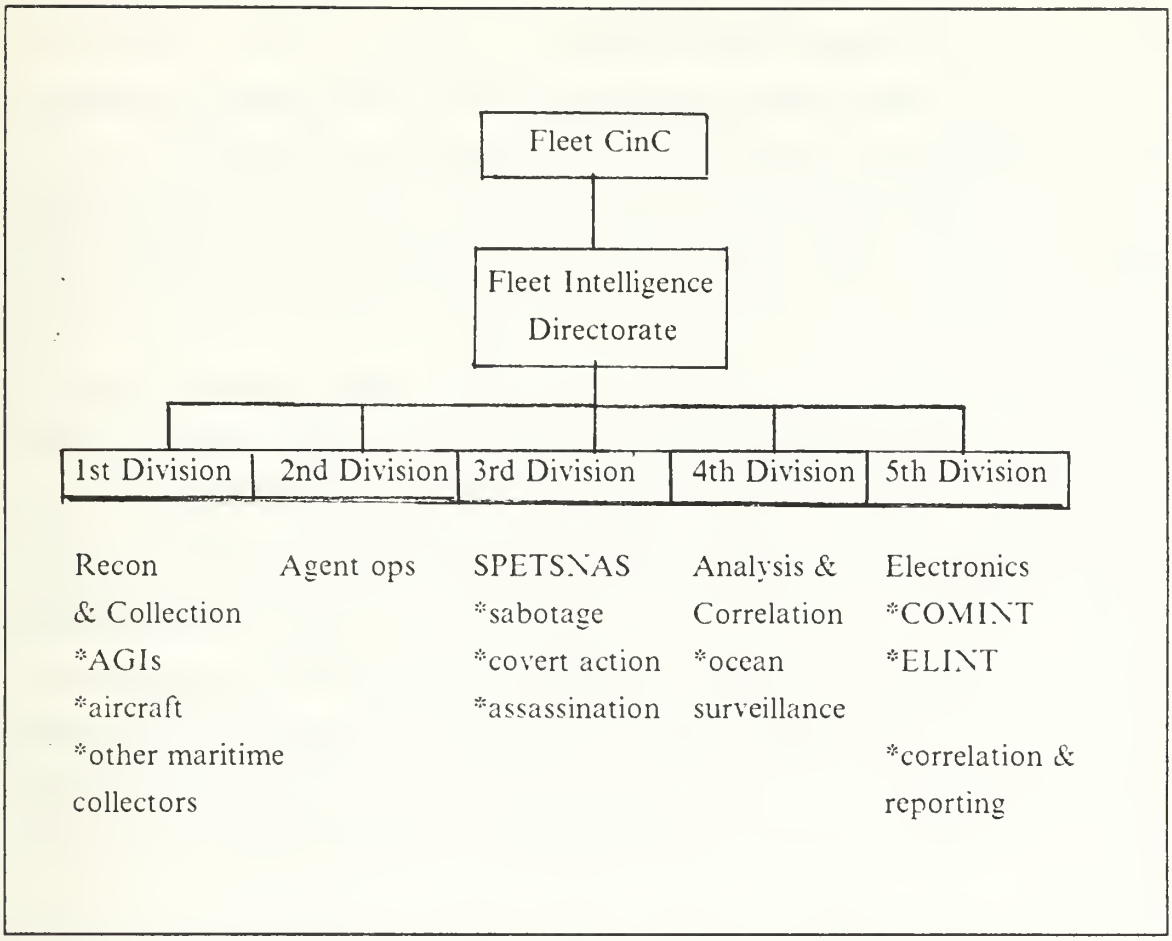


Figure 10. Fleet Intelligence Directorate

The RORSAT is equipped with a nuclear-powered radar that has a scanning width of 400-500 km. It has an approximated useful lifespan of 60-80 days. It has the capability of fixing individual ship coordinates and providing accurate targeting data a few momemts later. However, operation can be inconsistent since adverse weather conditions restrict radar observations. [Ref. 29 : p. 730]

ELINT (electronic intercept) ocean surveillance satellites are passive signal-gathering systems that "gather" electronic signals from Western ships' radars, HF communications, and other electronic sensors to obtain their location coordinates and possibly, information on the type of ship. The orbital period of an ELINT satellite is 93.3 minutes and many satellites have to be used to obtain full coverage of the ocean's surface. [Ref. 29 : p. 730] The Soviets have used both passive and active surveillance

satellites to monitor and collect intelligence during Iranian, Afghanistan, Falkland Islands, and Lebanon conflicts. [Ref. 43 : p. 55]

Photographic satellites have also been sent into orbit. These satellites can eject exposed film packets when passing over the Soviet Union. [Ref. 36 : p. 39]

The Soviets also possess the low earth orbit (LEO) MIR space station complex which provides many military applications as well as opportunities for testing new surveillance techniques. The MIR space station can provide optical or infra-red surveillance. [Ref. 53 : p. 45]

Soviet Naval Aviation (SNA) collects intelligence mainly from its inventory of TU-95 Bear D long-range maritime reconnaissance aircraft, Badger aircraft, and IL-38 May ASW aircraft. Approximately 45 Bear D aircraft are divided between the Northern and Pacific fleets. Bear Ds conduct radar and Elint reconnaissance missions and can transmit radarscope data through a video data link to platforms capable of launching missiles. Badger D/E aircraft are used for photographic and electronic reconnaissance. They can be identified by camera ports or electronic pods under their wings and electronic domes on their fuselage. Badger H/J aircraft are employed in the electronic countermeasures role. This role consists of accompanying strike aircraft in close formation, and standing off from ships being attacked to jam enemy defensive radars. [Ref. 36 : p. 61]

Northern Fleet Bear Ds conduct Central and South Atlantic reconnaissance missions from airbases in Cuba and Angola. The North Atlantic is patrolled by TU-95s based on the Kola Peninsula. Pacific Fleet Bear Ds conduct reconnaissance missions over the Sea of Japan and a major part of the North Central Pacific from airbases in Vladivostok, Aleksandrovsk-Sakhalinsky, Alekseyevka, and Petropavlosk. The airbases at Cam Ranh Bay and Da Nang, Vietnam deploy Bear Ds over the South China Sea and the West Pacific. Aircraft intelligence gathering in the Indian Ocean consists of IL-38 May deployments from Asmara, Ethiopia to provide reconnaissance flights over the Red Sea and the Gulf of Aden/Arabian Sea, and Bear D deployments from bases in the southern part of the USSR. [Ref. 29 : p. 730-731]

The Soviet Navy routinely uses surface combatants and submarines to gather data on the locations and movements of Western naval vessels and merchant ships. The Soviets also use their large merchant fleet, numerous fishing trawlers and oceanographic research and hydrographic survey vessels to collect intelligence against targets of opportunity. [Ref. 29 : p. 731] Passive intelligence gathering ships known as intelligence

collectors and designated AGIs are primarily used for monitoring the deployments of Western SSBNs, surface combatants and merchant vessels, aiding Soviet SSNs by vectoring them to follow Western SSBN trails, recording acoustic signatures of Western SSBNs, and collecting ELINT data. [Ref. 29 : p. 731] Soviet AGIs regularly operate off U.S. missile submarine bases at Holy Lock, Scotland, Kings Bay, Georgia, Charleston, South Carolina, and Bangor, Washington. AGIs can also be found routinely patrolling the U.S. west coast off Point Mugu or San Diego, Hawaii, in the Korea Strait, the South China Sea, and in the Indian Ocean monitoring traffic passing through the Strait of Hormuz. These ships regularly trail U.S. and NATO naval forces during exercises and keep watch off any areas of current military and maritime activity. [Ref. 43 : p. 54]

Soviet AGIs number over 60 vessels and are easily identified by their electronic antennas. The newest and largest AGIs, the Balzam class, have built-in data processing and analysis capability. They are also the only AGI class built with defensive guns and missiles. [Ref. 36 : p. 326]

All access ways to the 28,000 miles of Soviet coastline are protected by a chain of radio intercept stations. These stations are controlled and operated by Soviet Navy coastal defense units. The radio stations intercept transmissions from surface ships and submarines and locate their positions through triangulation. [Ref. 36 : p. 38]

The Soviets have laid two fixed seabed acoustic surveillance systems. One barrier extends from the North Cape to the southern end of the Svalbards to protect Soviet submarine refuges and operating areas in the Barents Sea. The second barrier extends eastwards off the Kuril Island Archipelago to protect the Sea of Okhotsk. These seabed systems are similar to the U.S. Seafloor Sound Surveillance System (SOSUS) and are used to track Soviet and foreign naval vessels. It is reported that these barriers can detect a submerged submarine at a range of 100 miles. Soviet submarines also drop bottom anchored passive acoustic surveillance buoys in various regions of the oceans to gather intelligence. [Ref. 29 : p. 732]

E. CHAPTER SUMMARY

The Blue commander must ensure that he understands the functioning of the Soviet Red naval C3 system. This system controls Soviet forces and provides the Soviet commander the ability to assess a combat situation, select his course of action and transmit his decisions as orders to subordinate forces. The Blue commander who is aware of Red C3 system characteristics and background can tactically neutralize its strengths while exploiting its weaknesses.

The Soviet Red naval C3 system is diversified, reliable, redundant and effective. Survivability of the C3 system is strengthened by redundancy. However, it is expected during a protracted war that communications and intelligence capabilities will be disrupted. Soviet dependence on satellites for long-distance communications and surveillance will be denied if the satellites are destroyed or overpowered by electronic counter measures. Also, in war, intelligence gathering platforms such as AGIs, fishing trawlers and merchant vessels will not be able to obtain the easy access to Western coastlines and relatively uninhibited patrolling of Western naval force activity that they are allowed in peacetime.

The effectiveness of the Soviet Red naval C3 system is highly reliant on the level of control and type of management used on its forces and firepower. Command posts provide naval forces with the tight, centralized control and management typical in the Soviet military. These command posts are hardened and redundant and their links with at-sea commands are reliable and secure. Command posts are designed to provide the commander (located at the command post) with detailed control of the engagement or battle from one focal point. However, this rigid structure may, in an engagement, battle or protracted war, overwhelm the commander. The amount of incoming data that must be analyzed and correlated could overload the communications system as well as the commander himself. Probable resultants of this overload would be a decrease of reliable and secure communications and a slower response time from the commander as he tries to sort out the information to use in his decision making process. Technology used to produce an effective focal point, such as automated computer systems, can reduce the time needed for the decisions making process, but could become so complex that sofware or hardware problems could be inherent to the command post. The commander or his staff must also possess more specialized skills to use this equipment.

Another possible problem with this rigid structure is the fact that the Soviets practice naval exercises with the described naval C3 system. Afloat commanders are exposed to constant deferment of tactical decisions to the command post commander. Thus, on-scene initiative and flexible response to changing situations may suffer drastically or be nonexistent. Morale of afloat commanders could also suffer since they play no part in the tactical planning of a battle or engagement. Furthermore, the command post commander is so accustomed to "calling the shots" that if a situation arose that tactical decisions could be better handled by the on-scene commander, the command post commander may not trust the abilites of that afloat commander. The only way a com-

mand post commander can be aware of and be willing to depend on a afloat commander's abilities is for the command post commander to either personally interact with the afloat commander or have favorable impressions of the afloat commander from past interactions with other or former command post commanders. The author of this thesis has been unable to find any evidence of such interaction.

VI. CONCLUSIONS AND RECOMMENDATIONS

This chapter will present a brief overview of the concepts, theories and systems that were discussed in previous chapters. Recommendations will be provided as to how the Blue force commander can use this knowledge to enhance the effectiveness of the Blue naval C3 system.

A. SUMMARY

Combat is an uncertain process for both sides. Neither side is completely sure of his opponent's next move, especially since the opponent is trying to conceal his actions or plans. Information on an opponent's forces and movements can be collected and analyzed. This information can often be fragmentary or contradictory and the opponent's intentions will continue to have a function of randomness. The Blue force commander must be able to assess the situation and determine the capabilities of his opponent's forces and means. The more the Blue force commander understands his opponent, the more he can affect the battle outcome. To understand his opponent, the Blue force commander must familiarize himself with the concept of control which pervades the Soviet military system.

Control is vital to the economic, political and military aspects of the Soviet state. The driving principles behind control include Marxist-Leninist theory, Soviet military thought, the effects of past wars and the revolution in military affairs, cybernetics, and context. An understanding of these principles will assist in shaping a perception of the Soviet commander's mindset.

Marxist-Leninist teachings provide justification for war as an ever-advancing struggle toward final conflict with imperialist ideologies, and prove that all wars involving the Soviet state are just, progressive wars aimed at protecting the socialist states and liberating peoples from national and class oppression. Soviet military thought promotes the concept of maintaining a powerful defensive strength and a high level of combat readiness to guard against possible imperialist aggression. Victory depends on the quantity and the quality of forces and equipment. Thus, the Soviets place great emphasis on preparation for war by supporting a large force structure. Military science answers questions on armed warfare and teaches the Red comander, through theory and practice, the art of war. Lessons learned from the Great Patriotic War instill remembrance of the sacrifices and destruction wrought against the Soviet people and infuse patriotism as well

as vindication of enormous military expenditures. Cybernetics has given the Red commander the tools to control his forces and equipment. Control is not a new concept to him. Control is part of his lifestyle, emanating from the heights of Communist Party leadership.

Soviet Naval Force Control is the process that the Soviets use to create and maintain combat readiness and fighting efficiency, and control naval forces during execution of an assigned mission. Its fundamental purpose is to ensure subordinate forces are used with maximum effectiveness when carrying out their mission. The complexities of modern warfare, especially the sharp reduction in time for the decision making process, makes it imperative that forces possess the highest combat readiness attainable and that there be the most comprehensive preparation of combat operations permissable under the circumstances. Victories in combat can hinge on the opponent who can collect and analyze intelligence, assess the situation, develop the best course of action and execute that action in the shortest period of time possible. To enhance the quickened pace of decision making, the Soviet Navy has employed the use of automated systems, particularly ASUVs. ASUVs manage combat data at a much greater rate than humanly possible. ASUVs also provide canned responses to various combat situations for the purpose of promoting more efficient and effective decision making by the commander. However, ASUVs may stifle initative by training the commander to choose a canned response vice thinking for himself. This may become evident when a seldom occurring or new combat situation arises for which there are no appropriate canned responses.

Centralization of forces allows the use of resources to be flexible and meet diverse requirements. It is especially important and used rigidly by higher echelon commanders when operational plans involve the use or coordination of highly destructive weapons, such as nuclear weapons or missiles. Decentralization of control is also important under appropriate conditions. Quickly changing, offensive operations in the naval arena may demand increased initiative on the part of unit and/or ship commanders. Of course, in the Soviet Navy, initiative carrys a price tag; the commander is held personally responsible for his actions, the actions of his subordinate forces, and the accomplishment of the mission. He is supposed to act within the goals of the Communist Party and his military superiors. Penalties for deviations could be severe enough to quelch ideas of initiative when the situation needs it and enforce following the operational plan. Also, decentralization is not a concept that is allowed frequently by the high command ashore controlling the commander at sea. This infrequency in transferring control of operations

to the afloat commander could make him indecisive, unwilling to use initiative and tend to adhere to the course of action selected by the ASUV.

In the past 15 years, the Soviet Navy has grown from a coastal defense power to a capable and formidable sea power that can amply support the political, economic and military objectives of the state. Soviet naval interests are directed toward building larger, heavier armed ships with greater endurance. The launching of the 70,000 ton nuclear powered carrier and the introduction of nine classes of submarines are prime examples of the Soviet Navy's determination to continue its naval buildup, a buildup that includes naval aviation, mine warfare vessels and other components of the Soviet Navy. The nuclear powered carrier also represents the Soviet Navy's efforts to extend battle group operations and sustain air defense or airborne ASW operations without the assistance of land-based aircraft or land-based facilities.

The present Soviet fleet is large and capable. However, large numbers of craft and deadly weapon systems do not, alone, represent the effectiveness of the Soviet Navy. They are one component of the Soviet naval C3 system. The other components are the naval command posts, intelligence sensors, and an interconnecting communications network.

Command posts provide the leadership and direction for the naval force structure. The type of leadership and direction chosen by the Soviet military, in most cases, is one of centralized control. In a tactical situation, the high command ashore collects and analyzes the data, selects the best course of action based on the analysis, and communicates his decision to the afloat commander. To assess the situation correctly, the Red commander must receive accurate intelligence. Intelligence sensors are varied but heavily dependent on satellites and intelligence collector platforms. The interconnecting communications network provides the fast, reliable and secure communications links that are the most significant element in any C3 system. In combat, especially a protracted war, intelligence sensors and communications networks will be affected and degraded; the extent of degradation encountered is subject to the situation circumstances. Nevertheless, the Red naval C3 system must be able to effectively continue its operations in a degraded mode.

B. RECOMMENDATIONS

The concepts examined in the previous chapters and summarized above provide insight into the Soviet approach to the C3 process and how it affects Soviet actions. This insight is essential to the Blue commander in a combat environment, where his know-

ledge of enemy forces and capabilities could affect battle outcome. Knowing the number and location of enemy forces and the range and firepower of their weapon systems may not be enough information for the Blue commander to formulate the best and most effective course of action for his C3 system. It may be important to know that in a tactical situation at sea, courses of action are frequently made by the Soviet high command ashore and communicated to the Red afloat commander. It may be important to know that Red commanders are highly educated in Soviet military science and the Soviet art and war, and that their actions are based on those principles. It may also be important to know what intelligence sensors the Soviet Navy relies on to collect its information. So many factors can play a role in the decision making process.

The Blue commander needs a complete picture of his enemy, meaning his mission, his prcedures, his capabilites, and his mindset. Marxist-Leninist theory, Soviet military thought, past war experience, and Soviet cybernetics provide insight into the Soviet mindset. The concept of Soviet Naval Force Control provides the procedures used to control Soviet forces and systems. Current and accurate information on the Red naval C3 system provides th mission and capabilities of the Soviet Navy. The Blue commander who is aware of and conversant with all of these concepts can formulate more effective decisions for the use and protection of his C3 system because he better understands his enemy.

The following recommendations can be used and applied to enhance the Blue commander's decision making process, and thus effect the progress of the Blue force C3 system.

- the indoctrination of key naval tactical decision makers and planners in Soviet Naval Force Control and the Red naval C3 system;
- the assignment of Soviet experts to staffs;
- better translations of Soviet professional material; and
- heavy exposure to wargames and trainers that simulate the Soviet naval force structure for naval commanders, their staffs and other designated naval personnel.

Key naval tactical decision makers and planners such as battle group staffs, combined warfare commanders, and tactical action officers, should be educated in Soviet principles of control and the application of these principles to the Soviet naval C3 system. It is imperative that they understand the capabilities of the Red naval C3 system When one understands an opponent's mindset and force capabilities, one can remove some of the randomness inherent in the opponent's next action. In other words, some

of the uncertainty can be eliminated from combat when one can second-guess an opponent's next course of action. Battle outcome can then be affected by the commander reacting to or outmaneuvering the opponent. To predict an opponent's next move, the Blue commander must understand the Soviet mindset and approach to controlling their naval C3 system. To provide a better decision making process for employing the Blue naval C3 system, key naval personnel must understand these principles. Education of key tactical decision makers and planners in Soviet Naval Force Control and the Red naval C3 system should be included in specified schools such as the Naval War College, Tactical Training Groups and Department Head School.

Indoctrination of key naval personnel will not make them experts in Sovietology. The assignment of Soviet experts to staffs will augment the Blue commander's abilities to perceive his opponent's next course of action. Soviet experts should be highly knowledgeable in the political, military and economic aspects of the Soviet state. He could then impart this information, as circumstances dictate, to assist the Blue commander in analyzing and assessing the situation and selecting the most appropriate course of action for the situation. The Soviet expert would be an advisor to the Blue commander on the Soviet naval force structure and capabilities. He would also advise the Blue commander on probable Soviet courses of action in combat, thus reducing some of the randomness and uncertainty inherent in decision making.

Inadequate Western translations of Soviet open-literature military writings could adversely affect the Blue commander's perception of Soviet Naval Force Control. In the past, Soviet Naval Force Control was translated as being equivalent to the U.S. concept of Command and Control. However, the concepts are not exactly the same. Naval Force Control defines a control porcess for managing and regulating the Soviet force structure to accomplish an assigned mission. Command and Control is a U.S. term that invokes a more generalized concept of using procedures, organization structure, and equipment (with heavy emphasis on equipment) to complete the decision making process necessary to complete an assigned mission. Thus, Soviet Naval Force Control and Command and Control are two concepts that achieve the same end but use different approaches.

Other Soviet military concepts have been misunderstood by the West because of inadequate English translations of Soviet Russian language writing. A stronger endeavor must be made to produce qualified Western translator-analysts, who are fluent in the Russian language and who understand Soviet military concepts. Attention to

context will yield more accurate and consistent translations, and thus, better comprehension of underlying concepts of Soviet Naval Force Control and other Soviet naval applications.

The Blue commander must be able to practice executing his naval C3 system in order to ascertain the effectiveness of the system during a conflict or war. Practice also determines the preparation and combat readiness of the system. Battle forces must practice combat tactics against an opponent's force structure. The most efficient approach to practicing during peacetime is for the Blue commander to involve his staff and subordinate forces in actual and simulated naval tactical exercises. Actual exercises are highly important in conditioning forces. Yet, heavy emphasis should also be placed on automated wargames and trainers for the Blue commander, his staff, and designated personnel. To provide effective simulation, there must be a working knowledge of possible Soviet actions and reactions within the C3 arena. Wargames and trainers familiarize players with the decision making process necessary in conflict that may be restricted by time or insufficient intelligence, the Soviet force structure, own force strengths and weaknesses, and the general execution of the Blue naval C3 system during intensified operations. Of course, automated wargames and trainers are restricted in application by not having the ability to provide every battle scenario possible; anomalies and exceptions in battle can not be predicted. However, these decision making tools do provide practice in executing the naval C3 process and allow testing of Blue force effectiveness against possible Soviet actions as well as Blue force initiatives in combat. Wargames and trainers also allow the Blue commander to learn from his mistakes, which may not be possible in an actual conflict.

The effectiveness of the Blue commander's naval C3 system is a function of his comprehension of own forces (mission, procedures, hardware, etc), the enemy's forces, and the combat environment. Knowledge of the Red naval C3 system and the Soviet Naval Force Control process applied to the system will provide the Blue commander with the ability to better protect his own C3 system from enemy interference and exploitation, aptitude to better neutralize, degrade, and/or destroy enemy forces, and understand the Soviet approach to the C3 process and how it affects Soviet actions during conflict.

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13. NOIC 1
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4600 Silver Hill Rd
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14. NTIC 1
Naval Technical Intelligence Center
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15. ONI (OP-OP2) 1
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16. NMITC 1
Navy, Marine Corps Intelligence Tng Center
Bldg N25A, Naval Station
Norfolk, VA
23511-6192

17. FITCPAC 1
Fleet Intelligence Tng Center Pac
NTS Bldg 176
San Diego CA
92133-8200
ATTN: CPT Law

18. DIA 1
Defense Intelligence Agency
Washington, D.C.
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19. DIC 1
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20. NOIC-DET Newport
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Naval War College
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ATTN: CPT Smith — 1

21. Cinc Pac FLT
ATTN: H-2
U.S. Pacific Fleet
Pearl Harbor HI
96860 — 1

22. Cinc LANT FLT
U.S. Atlantic Fleet
Norfolk, VA
23511
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23. COMTRA PAC
Commander Training Center
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San Diego CA
92147-5030 — 1

24. COMTRALANT
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25. OP-953
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Thesis
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c.1 Soviet Naval Force Control and the Red naval C3 system.